



MAGAZINE

PRICE TWOPENCE

JULY 1950



THE I.C.I. MAGAZINE

VOLUME 28 NUMBER 165 JULY 1950

The *I.C.I. Magazine* is published for the interest of all who work in I.C.I., and its contents are contributed largely by people in I.C.I. It is printed at The Kynoch Press, Birmingham, and is published every month by Imperial Chemical Industries Limited, 26 Dover Street, London, W.1. Telephone: REGent 5067-8.

CONTENTS

| | |
|---|-----|
| Magadi Soda, by A. E. J. Gawler | 194 |
| Information Notes No. 52 | 199 |
| Should I encourage my Son to be an Engineer? by J. E. Braham | 204 |
| Holoplast—The New Building Plastic | 207 |
| The History of Giant Gogmagog, by W. S. Bristowe | 211 |
| I.C.I. News | 215 |
| The Pleasures of Coarse Fishing, by S. Howard | 221 |

Front Cover: Ammonia Gas Compressors at Billingham

The Editor is glad to consider articles for publication.
Payment will be made for accepted contributions.

OUR CONTRIBUTORS

Few could be better qualified to give advice on engineering as a career than J. E. BRAHAM, I.C.I. Engineering Controller. Not only is he an engineer of wide experience but the problem is a very personal one for him, as his own son aged 20 stands undecided on the threshold of his career. Mr. Braham joined Billingham Division in 1928, and rose to be the Division's Chief Engineer ten years later. He joined the board of Nobel Division as Chief Engineer in 1946, and was transferred to London as Engineering Controller last March.

W. S. BRISTOWE, Head of the Central Staff Department, who writes on giants, is a man of many and varied interests which have one feature in common: they are off the beaten track, whether it is the study of folklore, or of Sherlock Holmes, or of spiders (on which he is an acknowledged authority). Mr. Bristowe joined Alkali Division in 1925. He was transferred to the Central Staff Department as its Deputy Head in 1938 after eleven years in the Overseas Department.

A. E. J. GAWLER, Deputy Overseas Controller, writes on the Magadi Soda Company with all the knowledge and authority that derive from his position as its chairman and from a recent visit to Lake Magadi itself. He became secretary of the company on his transfer to London in 1927, and a director five years later. He joined Brunner, Mond & Co. at Winnington in 1925 after some years in India with the company's agents in Madras.

The motto of SAM HOWARD, Home Sales Manager of Dyestuffs Division, is "Anything With Fins." He is one of those rare fishermen for whom all forms of fishing are a delight—from the salmon on world-famous beats of the Wye to pike in a Lancashire reservoir or rainbow trout in Lake Taupo, New Zealand. He has tried them all, and enjoyed them all. Mr. Howard joined British Dyestuffs Corporation in 1922.

MAGADI

By A. E. J. Gawler (Chairman, Magadi Soda Co.)

EVEN to I.C.I. people who are familiar enough with soda ash as one of the major products and mainstays of the chemical industry in Great Britain, the thought of seeing upwards of a hundred million tons of natural soda spread out before their eyes might seem remarkable; yet such is the sight when a turn in the road from Nairobi first brings Lake Magadi into view. Fifty or sixty miles farther back the road to Magadi traverses the great Athi plain, some 6000 feet above sea level, on which Nairobi stands. Then, quite suddenly, round the shoulder of a hill the road comes upon the eastern brink of the Great Rift Valley at the bottom of which lies Lake Magadi—some thirty miles ahead as the crow flies and at 4000 feet lower altitude.

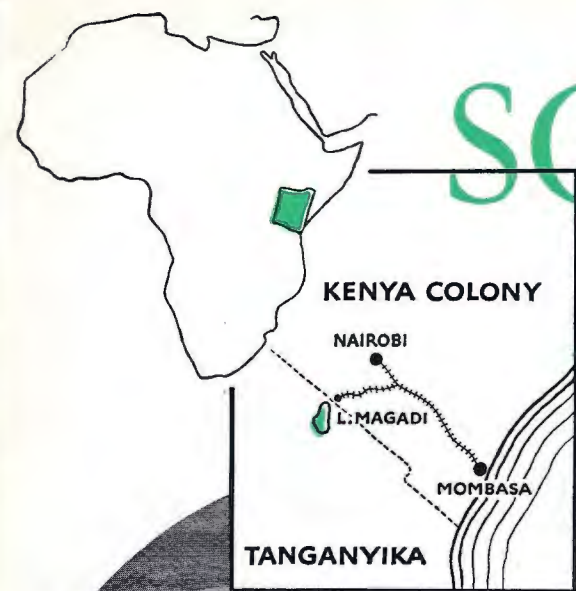
Over a million years ago volcanic activity on the eastern side of the African continent caused a number of earth subsidences which left a series of vast depressions, known as the Rift Valley system, extending for some 3000 miles between the Sea of Galilee and the Zambesi river. One of these, the Great Rift Valley, stretches nearly 1500 miles southwards from Abyssinia, and can be traced on the map by a chain of lakes, of which Magadi—two degrees south of the Equator—is one.

Before the 1870's Central Africa, including what we now call British East Africa, was almost unknown to the outside world, except that it was peopled by many warring tribes—dominant among them the "dreaded Masai"—and was a happy hunting ground for the slave trader. Then the discoveries of H. M. Stanley, David Livingstone and other explorers led to a scramble for territory among the great powers, and Britain and Germany found themselves the two main contenders on the east coast. This coastal zone was part of the possessions of the Sultan of Zanzibar, who leased part of it to a British chartered company—the Imperial British East Africa Company—while their rivals, the German East Africa Company, established themselves farther south, on the coast of what is now Tanganyika. Both companies thereafter struggled hard to establish spheres of influence farther inland, and in 1890 the boundaries of British and German East Africa were fixed by agreement.

In 1896 the British Government decided to build a railway from Mombasa to Lake Victoria Nyanza with the twofold object of providing easy access to the headwaters of the Nile and communications for the campaign to suppress the slave trade. It was not until this line was completed, at the turn of the century, that the hinterland of Kenya Colony and the country beyond really began to be opened up.

It seems that Magadi was discovered by a German named Fischer in 1883, but as the British/German boundary was fixed seven years later to leave Magadi some twenty miles inside the British zone, the possibility of its commercial exploitation may not have been recognised until later. Indeed,

SODA



although Magadi was visited by several expeditions in those early days, the first to do so with the object of making a detailed investigation was one which went there in 1903 or 1904. It included in its personnel a chemist who had previously been with Chance and Hunt Ltd. and who subsequently became technical adviser to the promoters of the first Magadi Soda Co. Although as a result of that visit the preliminaries for the formation of a company were completed, nothing seems to have happened until the firm of Marcus Samuel & Co. of the City of London took a hand in the matter and sponsored the flotation, in 1911, of a company called the Magadi Soda Co. Ltd., with a capital of £1,312,000. It is believed that Brunner, Mond & Co. were approached some time during this early period but decided against participation.

The construction was at once begun of a factory at Lake Magadi, a branch railway, 91 miles in length, linking the lake to the Kenya/Uganda Railway main line, and warehouses and a deep-water pier in Mombasa. Most of the work on these projects was completed by August 1914, but for a number of reasons, including the advent of the war and failure of the

company to find a satisfactory solution to the technical problems of soda recovery, the enterprise ran into heavy weather almost from the start.

Besides building the factory at the lake itself, the promoters planned factories in Japan, India and the United Kingdom for the conversion of Magadi soda into caustic soda and soda crystals. The works in Japan never materialised, but a caustic soda plant in Calcutta was actually operated for a short period from 1919 onwards. The British factory was built on a site at Irlam, Manchester, but before it could start operations much of its plant was requisitioned for war purposes, and as the company had insufficient resources to re-equip it after the war it never came into production.

By the end of the 1914-18 war soda ash production at Magadi had reached 12,000 tons per annum, and this was gradually built up, largely owing to sales in Japan, to 46,000 tons in 1922. All this, however, was very much below estimate, and, the company's original capital had to be supplemented by two debenture issues totalling £700,000. Competition with Brunner, Mond and other rivals in the export field became increasingly severe, and in 1923 the company went into liquidation. A number of reconstruction schemes were put forward, including one sponsored by Brunner, Mond & Co. Ltd. This was the one ultimately adopted, and it resulted in the formation of the present company at the end of 1924 with an issued share capital of nearly £600,000 and debentures to the value of £500,000. Brunner, Mond were appointed managers but held a relatively small minority of the shares, the remainder of the capital being issued in exchange for the debentures and the shareholdings (at greatly reduced face value) in the old company. Since then I.C.I. has gradually acquired virtually 100% of the shares, the debentures having been paid off over a period of years.

Lake Magadi is about 2000 feet above sea level and is about 17 miles in length, with an average breadth of about 1½ miles.



General view of the works and settlement at Magadi

The soda deposit is in the form of sesquicarbonate of soda ($\text{Na}_2\text{CO}_3 \cdot \text{NaHCO}_3 \cdot 2\text{H}_2\text{O}$)—or “trona”—and is fairly evenly distributed over an area of about 23 square miles to a depth, towards the centre of the lake, of some 8 to 10 feet, resting upon a layer of black mud. Its source is not far to seek, for all round the sides of the lake there are hot springs delivering great quantities of alkaline water into the lake basin; but the origin of these springs has given rise to much conjecture. They are all warm, and some are hot ($140\text{--}175^\circ\text{F.}$), and as there is an active volcano within sixty miles of Magadi and some extinct ones much closer, they probably derive their heat from subterranean lavas. One of the characteristics of the volcanic rocks of the district is that they have a relatively high soda content, and while the immediate origin of the Magadi deposit has not yet been ascertained, the ultimate source lies in these volcanic rocks. Another interesting feature of these springs is that their salinity is not too great to inhibit life. Indeed, the lagoons which they form harbour algae and myriads of small fish which are the staple food of an incredible number of birds. The Magadi area is, in fact, a bird-lover's paradise; ibis, avocets, stilts, marabout storks and many other aquatic species congregate there in large flocks, and flamingoes at times are to be seen by the thousand.

Except during the rainy season, when a layer of rainwater drains on to the surface from the surrounding hills, the lake is dry, the normal appearance of the soda surface seen from a distance being greyish white broken by the characteristic ridges thrown up by surface evaporation. Notwithstanding the dry surface appearance, however, the trona deposit itself

is full of mother liquor (containing both soda and salt in solution), which immediately fills any hole and which, if left undisturbed, soon re-forms into solid trona.

The process used for the recovery of soda ash is largely mechanical. Trona is collected in the buckets of a dredger which floats in its own excavation, called locally “the Paddock.” The solid lumps of trona mixed with liquor pass through breaking and crushing gear on the dredger pontoon, which reduces them to a size small enough to be pumped as a slurry through a floating pipe-line to the factory. There the slurry is sieved and washed several times to remove mud and other impurities, the resulting crystalline mass being stacked in dumps and allowed to drain. It is then conveyed to the calciners, long rotating kilns heated by fuel oil or by producer gas made from wood which grows locally, and this converts the trona into normal sodium carbonate—soda ash.

The quality is not as high as that manufactured by the ammonia/soda process in Cheshire, as in common with most naturally occurring minerals it contains impurities, the cost of removing which beyond a certain stage soon becomes uneconomic. When it leaves the works, however, Magadi soda ash has a guaranteed minimum content of 97% of sodium carbonate, and this is good enough for most of the uses for which it is required. The productive capacity of the works is approximately 100,000 tons of soda per annum, although actually production has exceeded this rate of output when operating all out, and plans are in hand to increase the capacity to 150,000 tons per annum.

As the market for soda in East Africa amounts to only a few

thousand tons annually, by far the greater proportion of the soda ash produced is exported overseas, mainly (in descending order of magnitude) to India, South Africa, Australia, South America and Malaya. Until the middle 1930's there was also a substantial market for Magadi soda ash in Japan. The development of the ammonia/soda industry in that country, however, gradually eliminated all imports, and Magadi was for a time hard put to it to find sufficient other markets to keep the works going. The situation was again transformed in the late war, however, when owing to its geographical location Magadi was enabled to meet the increasing requirements of markets such as India, whose previous sources of supply were either cut off or subjected to heavy transport hazards. In 1948 (Magadi's biggest year so far) Magadi soda shipments at 107,000 tons were more than double the tonnage of any other individual product exported from Kenya and Uganda combined. In the same period the value of Magadi exports represented 8.4% of that of the total Kenya domestic exports.

As a matter of interest it may be observed that the only other natural alkaline deposits in the world which are known to be operated commercially are Searles and Owens lakes in California and Wadi Natroun in Egypt. The last named is now nearly worked out, but the Californian lakes are still operated by a number of producers, the total soda output for 1947-8 (the latest year for which statistics are available) having been about 300,000 tons.

Another product made on a much smaller but still substantial scale at Magadi is salt. It has already been pointed out that this is present in lake liquor, and crystallised salt has

been known to appear on the surface of the lake in certain climatic conditions. In the works process, lake liquor is first subjected to solar evaporation, when crude salt separates out on the surface of the ponds. This is harvested, dissolved, purified and recrystallised into various grades of finished salt, which find a sale in East Africa for domestic and agricultural purposes. The tonnage produced varies between 15,000 and 17,000 tons per annum, and this meets the bulk of the Kenya and Uganda demand. Magadi salt cannot be exported economically, as the long rail haul to the coast (380 miles) would make its cost quite uncompetitive with the seaborne salt which is available in vast quantities on the Red Sea coast and at Aden.

Minor quantities of other alkali products are also made at Magadi, such as household soda (recrystallised "sesqui") and bi-carbonate of soda. Sodium fluoride is also obtained in limited amounts by mechanical separation.

Apart from a small Government settlement sixty miles from Magadi on the branch line, the nearest human habitation of any size is Nairobi itself, the capital of Kenya Colony, roughly seventy miles away by road. The Masai tribe, in whose reservation Magadi lies, are a nomadic and pastoral people who do not take kindly to manual labour. Virtually no Masai are employed by the company, therefore, and the African workers who come to Magadi from long distances share with the European and Indian staff the condition of being far from home.

All ranks and races have thus to be provided by the company with housing accommodation and with such amenities as a



Harvesting crude salt



(Photo: R. Horton)

A group of senior members of the staff at Magadi with Mr. F. J. Purssell, General Manager (centre)

shop, club and recreation rooms, playgrounds, etc. It may be noted here that Association football—played on a mud flat—is the game for the Africans, and inter-tribal and inter-sectional contests produce strong rivalry—so much so that the services of a peacemaker are sometimes needed.

There are at present 26 Europeans at the lake, who with their wives and families make up a total European colony of about fifty. The artisans are mainly Indian, the community which—some eighty strong—also provides the clerical workers, but the 1300 unskilled and semi-skilled workers in the factory itself and in the ancillary services are almost entirely African. As indicated above, these come from considerable distances, the nearest, the Kamba, from their reserve about 120 miles away, and most of the others some hundreds of miles from the shores of Lake Victoria. Africans are for the most part a simple and cheerful people, and their wants are few. When they have done enough work to accumulate sufficient money for their needs for the time being, it is their habit to go back to their reserves to help with the harvest or merely to resume family life, but they seek paid work again when the need arises to earn more money. Incidentally, it is testimony to the treatment they receive at Magadi that there is rarely any shortage of volunteers for service there.

The Magadi climate is hot—100° F. or over is not unusual and a minimum temperature below 70° F. is remarkable—but very dry, and it is therefore tolerable to Europeans both mentally and physically provided their living quarters give a high degree of protection, and cooling aids such as fans and refrigerators are available. Indeed, the bill of health of the white folk has been remarkably good on the whole. The country is arid with sparse thorn scrub, and although game, some of it big, abounds when the land is green after the rains it has less to show in this respect than the higher altitudes on either side of the Rift Valley.

When Britons find themselves in an uncomfortable spot they can usually be relied upon to "take all necessary measures," and our people at Magadi are no exception. The club, the tennis courts, the golf course (the ball may be lifted without penalty out of snake-holes) and the grandeur of the landscape combine to make life interesting and tolerable, and in two or three hours by car escape is always possible to the more equable climate of the Kenya uplands.

Sometimes the swimming bath is an added attraction, but here one touches on the great universal problem of Africa—water. At present fresh water for the Magadi Settlement comes ninety miles by pipeline, the railway having first call upon it for its locomotives. In times of drought not only is there no swimming bath but often the supply to domestic taps is available only for a very brief period each day. What this means can be imagined, as also can the pleasurable anticipation with which plans to develop water supplies from a plentiful source twenty-three miles away on the opposite side of the Rift Valley are now being followed.

Last February the community at Magadi were honoured by a visit from Lord and Lady McGowan.

A fuller account of that notable event will doubtless be given elsewhere. For the present it is sufficient to say that it provided a fitting climax to the first twenty-five years of existence of the present Magadi Soda Company.

Outpost of Empire and outpost of I.C.I. as Magadi is—indeed, perhaps for this very reason—its people value highly their membership of the I.C.I. family, to the prosperity of which incidentally they now seem fairly set to be regular contributors.



Ridges on the surface of Magadi Lake

Information Notes



Nobel Division representatives occupy the centre table

CENTRAL WORKS COUNCIL

An Urbane Twenty-ninth Meeting at Blackpool

THE twenty-ninth meeting of the Central Works Council was held at the Casino, Blackpool, on 19th May. Tradition is a plant which takes root rapidly, and consequently there were some at Blackpool who found the Casino an unwelcome substitute for the Winter Garden as a meeting place for Central Council. Others, however, preferred its airy windows with their wide view over the promenade to the sea, and the bright sunlight which streamed in through them, to the more artificial and shut-in atmosphere of the now familiar Spanish Hall.

Certainly the Casino provided a change, and despite the slightly unbalanced effect occasioned by the circular con-

struction of the gallery and its not altogether happy acoustic properties, the balance of opinion appeared, by the time the Council ended, to have swayed in its favour. But traditionalists and "progressives" were decidedly at one, however, in their appreciation of the luck of the weather, which once again brought forth a real spring morning of sunshine and breeze to invigorate the day's deliberations—as indeed they had also been at one the evening before in approval of the far-famed Blackpool Circus, attendance at which is such a feature of these May meetings.

Once again Mr. John Rogers was in the chair when the meeting formally opened its proceedings with a moving



Mr. John Rogers presents First Aid Trophy medals

tribute by the Secretary, Mr. Alfred Inglis, to the late Mr. W. Lyons, that stalwart member of Works Council and trusted trade unionist, whose sudden and deeply regretted death in February came as a severe blow to all his friends at Billingham and in the Central Council. His memory was honoured by a minute's silence, which was observed standing by the whole Council.

Mr. Inglis's next task was the very pleasant one of bidding welcome on behalf of all present to Mr. W. H. Ashcroft (General Chemicals Division), whose record of service in regard to Works Councils is almost certainly unique, extending back, as it does, to the days prior to the merger, when Mr. Ashcroft was invited to serve on the first Council which was just about to be started up. This was in 1920,



Dr. Cronshaw has an informal word with Mr. McCall (Nobel Division)

and, as Mr. Inglis informed the Council with obvious pride, Mr. Ashcroft with a break of one year only had served upon his own Works Council continuously since that date and also had long service on the Central Council. This was greeted with prolonged applause, which broke out afresh when Mr. Ashcroft himself rose to acknowledge his reception. To serve as a Works Councillor, Mr. Ashcroft reminded his hearers, is no sinecure, and for some few moments he went on to recall to his audience the underlying purposes for which the Works Council Scheme had been launched: namely to dispel fears and suspicions, and to give an understanding of mutual difficulties.

Those were the pioneering days, when such a thing was new to industry, and it was particularly fitting for Mr. Ashcroft, who has seen them and seen the whole movement grow to its present-day size and importance, to recall past events and to estimate how far the pioneers had been justified in their hopes and ideals. In the main his conclusions were encouraging, and the applause when he sat down showed clearly how



Mr. W. H. Ashcroft holds an almost unique record

impressed the Council was with this eye-witness account of the origins and development of the scheme.

Mr. Winsor, a visitor from Canadian Industries Ltd., I.C.I.'s associated company, was next introduced by Mr. Inglis and warmly welcomed by the Council. Mr. Winsor had only managed to be present at Blackpool as a result of night journeys and ruthless condensation of his schedule; and the Council appreciated the interest and sympathy which had prompted his coming at so much personal inconvenience. Last but not least of the Council's distinguished visitors to be welcomed were Mr. Hamand (Personnel Manager) and Mr. Brown (Labour Officer) from another associated company, British Nylon Spinners Ltd.

It was with sincere regret that the Council heard that Mr. John Paterson would not be with them as on past occasions to report upon the I.C.I. Savings Bank, the Pension Fund, etc., on account of serious illness.

By now the stage was set for the opening address from the chair, which Mr. John Rogers proceeded to give with all his customary grace, humour and benevolence. Mr. Rogers



Lime Division delegates with Dr. Saunders (right, front), chairman of the Division

certainly has a way with him, and this way was refreshingly evidenced by the absolutely informal manner in which in his address he roved from one subject to another, seemingly as ideas struck him, interweaving anecdote with reflection and reflection with jest, but always sincere and always keeping the attention and the sympathy of his audience, as befitting one who is not only humorous but in humour. One serious note he had to strike, however, and this at the outset when he had to report that it was upon the advice of the doctors that the Chairman, Lord McGowan, had been prevented from fulfilling his intention to be present and to tell the Council something of his recent tour in South Africa. Certainly Lord McGowan's absence was a disappointment, but the Council was relieved to hear that the Chairman's medical advisers were satisfied with his progress and that he was himself, as always, in high heart.

The termination of Mr. Rogers' address signalled the break for coffee, a break which was perhaps just a shade more protracted than usual on account of the bright sunshine gleaming along the front and on the sands and the invigorating breezes off the sea which tempted Councillors away from the Casino to the Esplanade and made them, unaccountably and dare we say it, just a trifle less eager for the fray than usual. After all, human nature being what it is, the sternest controversialist and the oldest parliamentarian must recognise moments of weakness when the delights of a May morning seem of more intimate significance than all the honours of the debating chamber.

Once reassembled, however, and the minutes of the previous

meeting formally confirmed, the Council got down to the first item on the agenda, the resolution which had been referred back to Division Councils from the last meeting, that one week's leave with I.C.I. pay should be granted to members of the Boy Scouts and Church Lads Brigade in order to attend annual camp.

The motion was put by Mr. J. W. Blackwood (Billingham) and seconded by Mr. F. J. Johnston (also of Billingham). Mr. Blackwood, conceding the point that it was difficult to draw a line, suggested that the line established before the war afforded the best solution. Mr. Johnston dwelt upon the problem confronting the country from the increase of child delinquency and drew a round of applause when he affirmed that it was not at home and with their parents that young people were found to lack a healthy and corrective influence, but outside when on their own. All the more need, therefore, to encourage the excellent youth organisations which were doing such good work.

Mr. H. O. Smith informed the Council that since they last met the position had been examined very carefully afresh. He regretted that he would not be able to advise the Board, should the resolution be put to the Council and passed, to accede to it. The fact was that a line had to be drawn somewhere, and if the line was to be extended to include the Boy Scouts and Church Lads, what about all the other youth organisations who could justifiably claim that the work they were doing was in every way comparable to that of the two mentioned? Mr. Smith reeled off a formidable list and raised a laugh by enquiring whether the Young Communist League or the



Mr. J. Parkes (Alkali) appointed Trustee of I.C.I. (Workers') Pension Fund

Conservative Primrose League had not claims to be included.

He pointed out that it could not really be said that the pre-war ruling was applicable today. The whole circumstances were different. In those days there were not two weeks' paid holiday but only one. What was now demanded would be virtually three weeks' paid holiday for certain sections of the Company, and this, in view of all the circumstances of the day, could not be justified. Mr. Smith declared that it was always less pleasant to have to say no than to say yes, and while it was, of course, open to the Council to vote on the issue, he would not disguise the fact that he could hold out no hope of the Board's decision being altered.

After Mr. J. H. Angus (Billingham) had expressed disappointment at the Board's decision, and urged once more that the matter was a national rather than a Company one, the motion was put to the meeting. A rather lengthy count necessitated by the oblique shape of the room was then taken by Mr. Merrie and his little band of tellers, and the motion was lost by the narrow majority of 2, the voting being 89 for and 91 against.

A further motion, namely that the same facilities should be extended to officers of the two societies, was then put to the meeting and defeated by 109 to 64.

It was now time to consider the report of the joint committee which had been appointed to revise Standing Orders and submit a fresh draft. Accordingly Mr. J. U. Gilmour (Metals Division) and Mr. G. B. Jones (Dyestuffs Division) in turn proposed and seconded the motion that the joint committee's recommendations should be adopted. Tribute was paid by both speakers to the assistance received from the Legal Department, particularly from Mr. Lang. The gratification—one might almost say the relief—of the Council at having such a thorny problem so satisfactorily and competently resolved was expressed not only in the unanimous vote with which the motion was accepted but in the vote of thanks to Mr. Inglis, Mr. Lang and Mr. Hay which was included in the final speech of commendation made by Mr. Marsay (Billingham).

Heartened by this latter proceeding, the mood of general satisfaction was further stimulated by the pleasing spectacle of the presentation of medals to the members of the winning

team of the 1950 First Aid Competition. Mr. F. Holt, Managing Director of General Chemicals Division, introduced the winning team—that of Gaskell-Marsh—whose total of 297 marks out of 400 earned them not only the victor's place but the unrestrained applause of the meeting.

Members next heard the report of the I.C.I. Savings Bank in 1949, and gave their eager assent to Mr. Rogers' proposal that a word from the Council should be sent to Mr. Paterson expressing their deep regret at the reasons for his absence and their hope that he might soon be restored to health. The thought of their friend confined to a bed of sickness when they themselves were free to enjoy the delights of such a lovely day in Blackpool clearly saddened members, and there could be no mistaking the sincerity and feeling with which the message of greeting was despatched. The Council now listened to a very satisfactory report on the year's working ably expounded by Mr. Young in Mr. Paterson's absence, and this was followed by similar reports of the year's operations of the I.C.I. National Savings Group and the I.C.I. Benevolence Grant.

At this stage came the report on the Safety Campaign, which was introduced by Mr. H. R. Payne in the absence through indisposition of Sir Ewart Smith. Mr. Payne is not one to call a spade by any other name, and remarking that he would probably get into hot water for singling out individual works for honourable mention, he none the less gave Blackley a well-deserved pat on the back for its record of one million hours without a single lost-time accident, and that despite its very far from ideal siting and layout. Billingham too received a bouquet for its accident frequency rate of 0.7 for the first quarter of the year. Mr. Payne recalled, however, that the general picture was shadowed with a sombre band of black when it came to the fatal accidents category, where they had to deplore ten cases of fatal accidents in 1949 and eight already in this year. There would be no point, said Mr. Payne, in going into details at that moment. The accidents had all been the subject of the minutest investigation, not in any sense to apportion blame but to try to ensure, as far as human endeavour could, that no such accident would ever occur again.



Dr. Cronshaw meets Mr. T. G. Worton (Billingham Division)

Mr. Rogers was reminded by Mr. Payne's reference to Blackley to tell the story of the proud recipient there of a gold watch for long service who was heard a few days later to be enquiring what the time was, and when challenged as to why he did not consult his own timepiece countered with the indignant expostulation: "Do you think I'd bring a thing like that to a . . . place like this?" This drew forth a general round of laughter and applause.

It was in this light-hearted mood that Mr. Rogers brought the morning session to an end and the company repaired downstairs to the ground floor for refreshments followed by lunch.

In the afternoon, after introduction by the chairman, Mr. J. L. S. Steel, the Overseas Director, rose to tell the Council something about I.C.I.'s efforts to help bridge the famous dollar gap which has overclouded Britain's economic position since the end of the war.

Mr. Steel, addressing Council for the first time, requested that customary indulgence which is given to all maiden speakers by the House of Commons, but it became speedily obvious that he stood in no need of extenuation. Here indeed was an example of the art that conceals art. How simple it all sounded, as he proceeded to unravel the complications of the dollar exchange position and the underlying calculations upon which the country no less than I.C.I. hopes to be able to claw its way up the steep face of the cliff which has somehow to be scaled if there is to be a sufficiency of exchange in order to pay for those essentials—food, raw materials, and machinery—which can be obtained only from the dollar countries and without which our own standard of life cannot possibly be maintained. Mr. Steel explained the reasons which had led I.C.I. to acquire a majority holding in the American firm of Arnold Hoffman and Co. Inc., and lucidly as ever he presented a picture of the advantages both as regards manufacture and sales which I.C.I. might with reason hope to expect from the acquisition of a going concern within the U.S.

But perhaps it was when he came to answer the various questions which were put to him and to deal with the by no means unsubstantial fears which one or two expressed as to the chances of ever really gaining more than a foothold in the American market that Mr. Steel showed most clearly the mastery of his subject which he enjoys. It is so difficult extempore to be both direct and simple; Mr. Steel was both. In particular his challenge that one and all, by merely looking to the efficiency with which they did whatever job was theirs and raising that efficiency to the highest pitch of which they were capable, would be making a direct and possibly a decisive contribution to the outcome of the struggle was, as Mr. Rogers declared, something for which members might well be grateful. It gave, he said, to each his own line of attack; and Mr. Steel had rendered a great service by expounding the problem so lucidly.

After Mr. Steel's address and the questions arising from it, the remaining items on the agenda were soon disposed of and the twenty-ninth ordinary meeting of the Council came to a conclusion almost exactly at the time prescribed for afternoon tea. Mr. T. McCall in a few gracious and warmly expressed words proposed a vote of thanks to the chairman and the board.

Every Council meeting has, inevitably, its own individuality; almost, one might say, its personality. Perhaps the predominant note of this was its urbanity. There were not, it is true, any points of a highly controversial nature on the agenda, nor any topics upon which it was possible for strong emotions to be aroused; in consequence oratory would have been out of place. None the less one tends to look to a Central Council for a certain amount of rhetoric, if not invective; and the absence of both gave to the debate an atmosphere rather of the upper than of the lower chamber. Is the Central Council becoming imperceptibly the Senate rather than the Forum? Time will show, but such a tendency would scarcely be in sympathy with the vigorous surroundings of Blackpool!



Metals Division vote on a show of hands

Should I Encourage My

By J. E. Braham

ALTHOUGH it is perhaps natural that this article should be written by an engineer, I am by no means certain that an engineer, let alone myself, is necessarily the person best qualified to do so. If I am to give an answer to the question "Should I encourage my son to be an engineer?" I can only attempt it on the basis of my personal experience as a mechanical engineer, the greatest part of whose twenty-eight years of industrial experience has been gained in the chemical industry.

As an engineer with a son aged 20, who is now doing his national service as an officer in the Royal Engineers before going up to Cambridge, and whose performance at school has been one of marked success (with a leaning towards the scientific side) leading up to a scholarship, I shall in all probability have to find the answer to this question for myself in the near future.

I am very clear about one thing, and that is that I shall not attempt to persuade my son as to the career he should follow, be it engineering or not. If he feels a definite urge to become an engineer, I shall have to decide whether or not I should encourage this tendency on his part. In this I shall have a difficult task, because in spite of his achievements up to the present time and of his apparent leaning towards the sciences I am by no means certain that from the point of view of personal characteristics engineering is the profession he is cut out for.

If you were discussing your son's future with me you would, I am sure, ask me what are the factors influencing me in the case of my son. I shall try to explain them to you, but before doing so I would like to tell you what I believe to have been the reasons why I took up engineering. In the first place, I had from an early age a natural interest in mechanical things. I liked to do more than merely play with trains and other mechanical toys: I wanted to make them do things for which they were not designed, and in this I sometimes succeeded. I made model boats of various shapes and sizes, some driven by clockwork, some by steam, and some by electricity. In a few cases the machinery was an adaptation of boilers or engines originally made for other purposes. You may say that all this was sufficient reason for my taking up engineering; but when I tell you that I was not really very skilful in my various "model" engineering efforts and that there was no known record of any engineering tendencies in our family, you will, I think, agree that these indications on my part were not alone a sufficient reason for a decision to embark on an engineering career. In my case, however, a determining influence had already come into the picture, the effect of which I was much too young at the time to realise but which I later became convinced was probably a very potent factor in deciding my future. I should like to tell you of this, as it illustrates the influence which suggestions can have on the young; and I think it will help you to understand better the views I shall express later in this article.

During my very early days I had to have treatment for a slight physical weakness, and I was taken to a doctor who was then, and more so later, very prominent in his profession. On the last occasion when he saw me and pronounced me



The Drawing Office, in which most young

cured (not far short of fifty years ago) he asked me, as I can remember clearly to this day, what I was going to do when I grew up. When I hesitated to give him an answer, he took my hands, examined them, and said he thought I should take up engineering, as I had the right-shaped hands for it. Whatever influence his remark had on me (and because I have remembered the occasion so clearly I think it must have been considerable), it was one for which I must be grateful.

Coming back to my son, I would say that my principal reason for hesitation is that he has not, in my opinion, shown sufficient enthusiasm for mechanical things. I must not over-emphasise this factor, since, of course, many extremely successful engineers have been duffers with their hands and have been in no sense practical men. I am sure that one should rather consider the matter from the point of view of the general type of man who will make a good engineer than of the exceptional case, and that you would be well advised to be guided quite a lot by the practical ability of your son.

There is a second factor which presents a problem to me, and this is much more difficult to explain, since it is far less concrete than the lack of interest in mechanical things. It is

Son to be an Engineer?

(Engineering Controller)



engineers spend part of their training

that I have a feeling that engineering would not give full satisfaction to my son's faculties, physical or mental. It is not enough that a boy should have scholastic and practical aptitude for engineering. He must have the right overall attitude, particularly of mind, towards all that engineering means. This is far from easy to assess, but if you know your son as well as you should, you will be able to determine whether his inclinations for engineering are sufficiently real for you to be justified in encouraging him.

You and I have a very serious duty to perform, because the advice we give and the encouragement we show will probably be the principal factors which will decide whether or not engineering as a career is selected. A man's career, his material success, his contribution to his country's progress, and his happiness in the years to come, are in the balance. Happiness in a career, which provides ideal conditions for giving of the best, results in some measure from material success, but far more from an occupation which provides an intense interest, for which the individual is really suited, and in which he can give satisfaction not only to his employer but to himself.

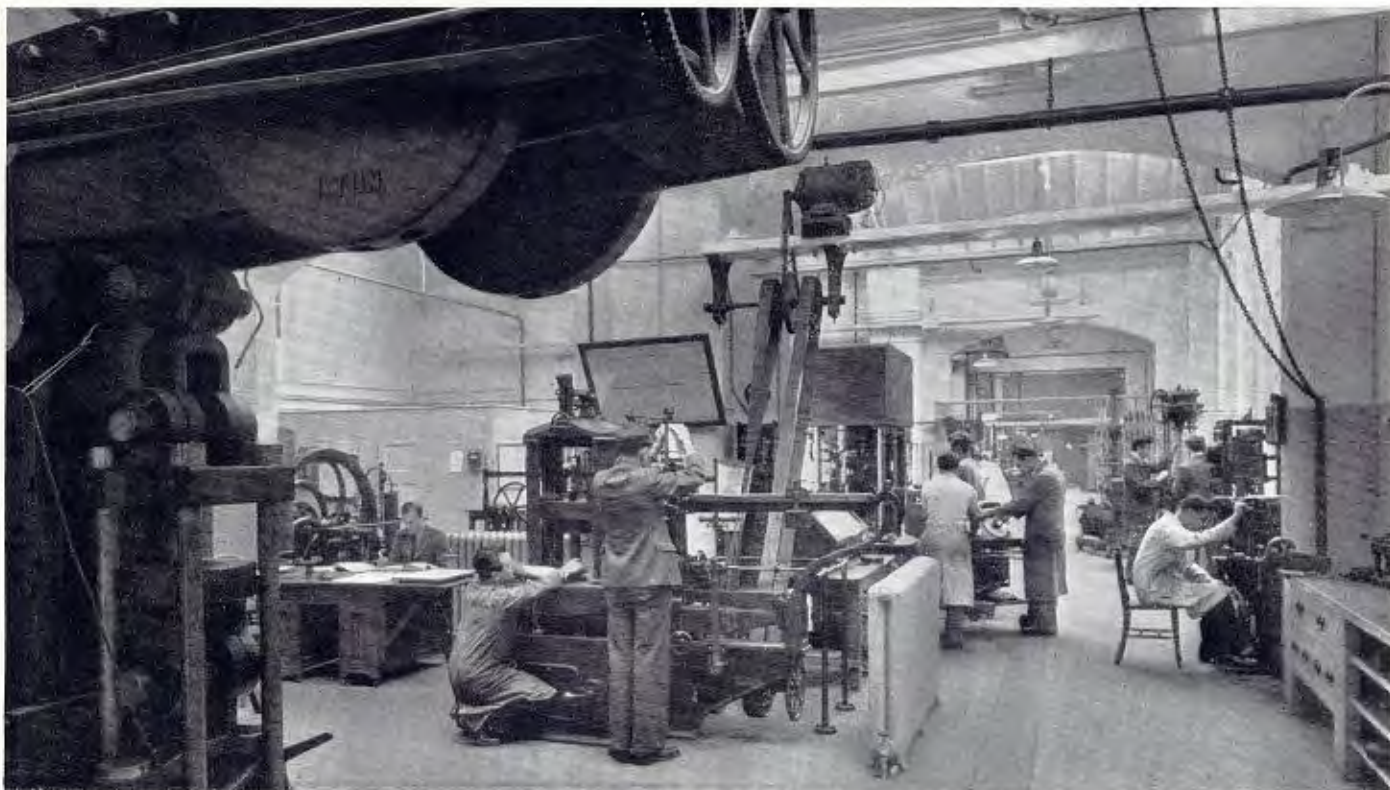
If, as a result of considering the problem on these lines, you feel sure that your son should be encouraged in his desire to become an engineer, you are still faced with a further problem. Can you give him, apart from advice, the conditions, financial and physical, which he will need if he is to have a fair chance of qualifying as an engineer? The process of qualifying demands patient study, hard work, intense interest, and last, but not least, patience. The process is a long one: you must make sure that your son realises this fact.

As regards the financial aspects, the problem will depend largely on the starting-point of your son's career as an engineer, the course which he can best follow to attain his professional status, and the goal in industry which his present and potential qualities make it possible for him to reach. Broadly speaking, there are three lines of approach, as follows:

1. Through a craft apprenticeship, which would occupy about five years, on to a Higher National Certificate or associate membership of the appropriate professional institution by studying at a technical college, or to an external degree through Matriculation, or both.
2. From a secondary or grammar school to the attainment of a Higher School Certificate or Matriculation, followed by a period of student apprenticeship in engineering of maybe about three years' duration, on to a Higher National Certificate or associate membership of a professional institution or an external degree, or both.
3. A public or secondary school education leading to a Higher School Certificate or Matriculation and thereafter three to four years at a university, the university period being preceded, followed or both by a college apprenticeship of between two and three years' duration in all.

It would not be possible to state in terms of money the implications of each of these routes, but in general I have given them in increasing order of expense. All can lead to worth-while positions: the first in the majority of cases to, at the outset, the position of draughtsman followed by the opportunity of promotion in the design office or to a position as a construction, maintenance or production engineer; the second to similar positions but with possibly improved chances of obtaining more responsible posts; and the third leading to research, development, or design posts, followed by more responsible positions of a managerial type. All three courses can, and have, led to the highest positions in the profession. No general answer could be usefully given if you were to ask which of the three main approaches would best suit your son, as the answer for him would depend on several factors, particularly his age, his scholastic tendencies and ability, his practical interests and skill, and his personal characteristics in relation to the conditions of life associated with the course of training undertaken. The best advice I could give would be that he should aim high but not too high, and that you should be guided by the opinions of those who know your son's capabilities and by your own good sense.

If the selected approach is through what is often called the



In Kensington, the Imperial College of Science and Technology provides for undergraduate instruction and post-graduate research

“hard way” of craft apprenticeship and night schools to a Higher National Certificate and/or associate membership of a professional institution, and if your son develops during that period the requisite qualities and capabilities for high technical achievements, then he can try for an external degree, or possibly obtain a scholarship to a university and perhaps study there for an honours degree. Whether or not these latter possibilities arise, the “hard way” training period will be time very well spent.

The physical environment necessary for your son during his training is all-important. He will have to work very hard and will often be very tired and sometimes discouraged. He must have the best possible conditions at home for relaxation and often for home study. You must not forget this part of the problem.

Before summing up, which I shall do by asking you a number of questions, I should say something about the part played by engineers in the present-day world and of the part they will play in the future. It would be true to say that to practically every human activity engineering makes its contribution. If you go over your actions one by one during any twenty-four hours of your life, you will find that the things you have used, whether in sleep, in travel (even if on foot), in work, in recreation, or in feeding hours, all in one way or another—many to an extent you probably have not realised before—needed for their creation engineering effort. The marvels of chemistry, medicine and surgery are only available to you by the combined work of the chemist, the physicist, the physician, the surgeon and the engineer. Engineers are indispensable in the conduct of our lives, and, if the best is to be achieved from the rapidly growing fund of scientific knowledge, more and more and better and better engineers of all categories will be required. Whatever type of engineering

is followed—civil, mechanical, electrical, chemical, or one of the many others—the fields involved are, broadly speaking: (1) research; (2) design and development; (3) production, construction and installation; (4) operation and maintenance. For many there will be the opportunity for experience in most of these fields, particularly if they gain employment with a large concern, but whatever the field entered, the man who is by nature an engineer will find plenty of scope for his interests and capabilities.

I think I can best sum up by asking certain questions, because the answers to them will go a long way towards providing the answer to our problem. They are:

1. Has your son a natural interest in and understanding of mechanical things, an interest and understanding which show themselves not only in the way he talks about things but in the way he does things?
2. Has the scholastic performance of your son been really good, and has he the capacity and determination to acquire scientific knowledge from both the theoretical and the practical aspects?
3. Does your son realise that to qualify as an engineer is a long process and one involving much hard work?
4. Can you ensure your son the financial and physical conditions he must have if he is to have the proper chance of qualifying as an engineer?

If you are sure that the answers to these questions are in the affirmative, then you need have no hesitation in encouraging your son to be an engineer, because if he does so he will be entering an expanding profession of extreme importance to his country and to mankind generally, which, speaking from personal experience, I know can provide an occupation giving him real satisfaction and, by that satisfaction, happiness.

The New Building Plastic

HOLOPLAST



HOLOPLAST—pronounced hollow-plast—is a new laminated plastic building material which has certain outstanding properties: it is remarkably strong, it is remarkably light, and it is not inflammable. These three characteristics were sufficient to put development of this material during the war into the high-priority class. The Admiralty were at once alive to its possibilities, and the entire wartime production of Holoplast was used for ships, where lightness, strength and non-inflammability are of such immense advantage.

Today Holoplast is marketed commercially and seems to have a big future assured. Constructed in panels 8 ft. by 4 ft., it is being used not only in ships but in factories and offices, hospitals and schools—for roofs, ceilings, doors, partitions, furniture, and even for walls. Famous liners like the *Queen Mary* and the *Ile de France* have been fitted with Holoplast; and one of the more recent Holoplast orders is for the vast new Government offices in the course of construction in Whitehall, where it will be used for all office partitioning.

The story of the association of the Holoplast Company with I.C.I. begins in 1940, when Mr. Dod Gonda, a research engineer, arrived in Britain carrying with him laboratory-made samples of the revolutionary building material. The Plastics Division of I.C.I. was at once interested and gave technical support. Later, when the Holoplast Company was formed, I.C.I. became shareholders.

With the blessing of the Admiralty facilities for production were found in a large well-known works at Manchester, and the first full-scale Holoplast panels were produced there in 1941. They were submitted without delay to the Admiralty for approval and called forth the remark that "the dream of a naval architect has been achieved." Production at Manchester was stepped up, and simultaneously work began on building a factory at New Hythe, near Maidstone in Kent. The factory did not come into full production until 1944, but meanwhile at the Manchester works sufficient Holoplast was now being

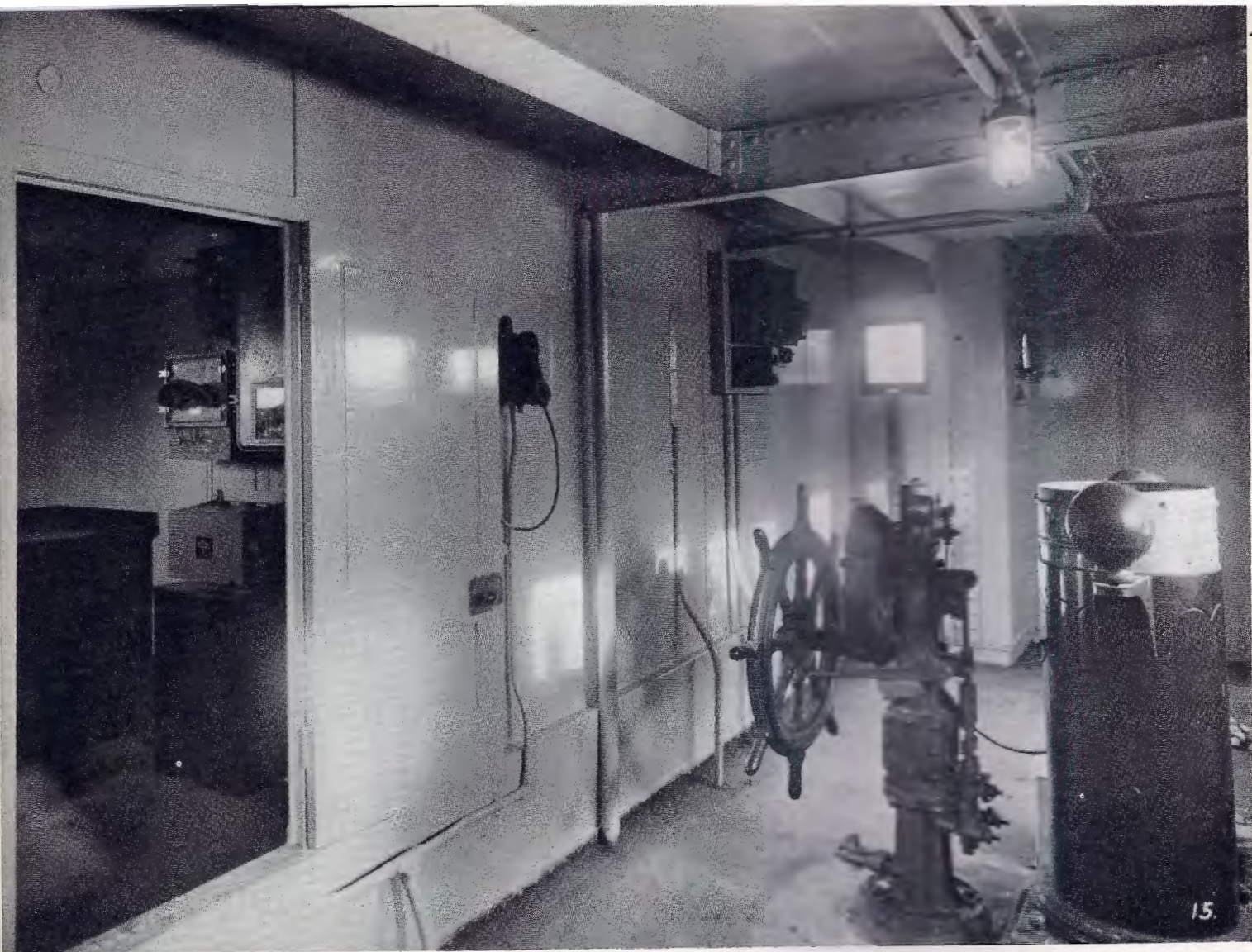
produced under makeshift conditions for the aircraft carrier *Nairana*, launched in 1942, to be fitted with Holoplast bulkheads. She was the first of many ships.

Holoplast materials are made of pulped wood fibres and a synthetic resin. The pulped wood is first formed into a substance like paper and then impregnated with the resin before being fabricated into the required shape. Finally the material is put into a powerful press under high temperature to emerge as a finished panel measuring 8 ft. by 4 ft. The characteristic panel consists of two faces integrally joined together by a series of parallel webs to form cavities throughout the length of the material—from which the word Holoplast is derived.

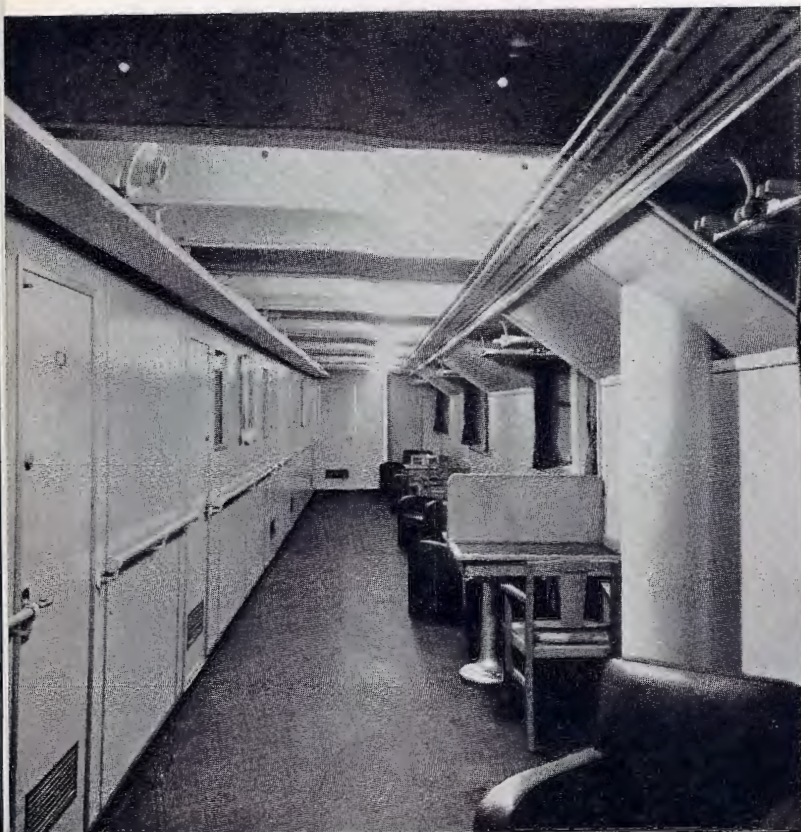
The I.C.I. contribution is considerable. Plastics Division make the all-important synthetic resin from raw materials largely drawn from Billingham Division. Many of the fine finishes originate in Paints Division, and Metals Division are constantly devising new light alloy extrusions which are vital to the success of the material's use.

The material is stronger for its weight than steel, it is impervious to moisture and vermin, and is proof against rot. It has a hard-wearing and beautiful finish of many different varieties. An outstanding feature is the ease and speed with which it is erected, since the standard panel enables new construction and alterations alike to be accomplished in half the time as compared with traditional materials. In principle Holoplast is a material which utilises some of the most common and easily obtainable products of nature in a new and more efficient way. For example, timber used for building in the traditional ways means that half the tree is wasted: in Holoplast virtually the whole tree is used.

The pictures overleaf illustrate its many uses.

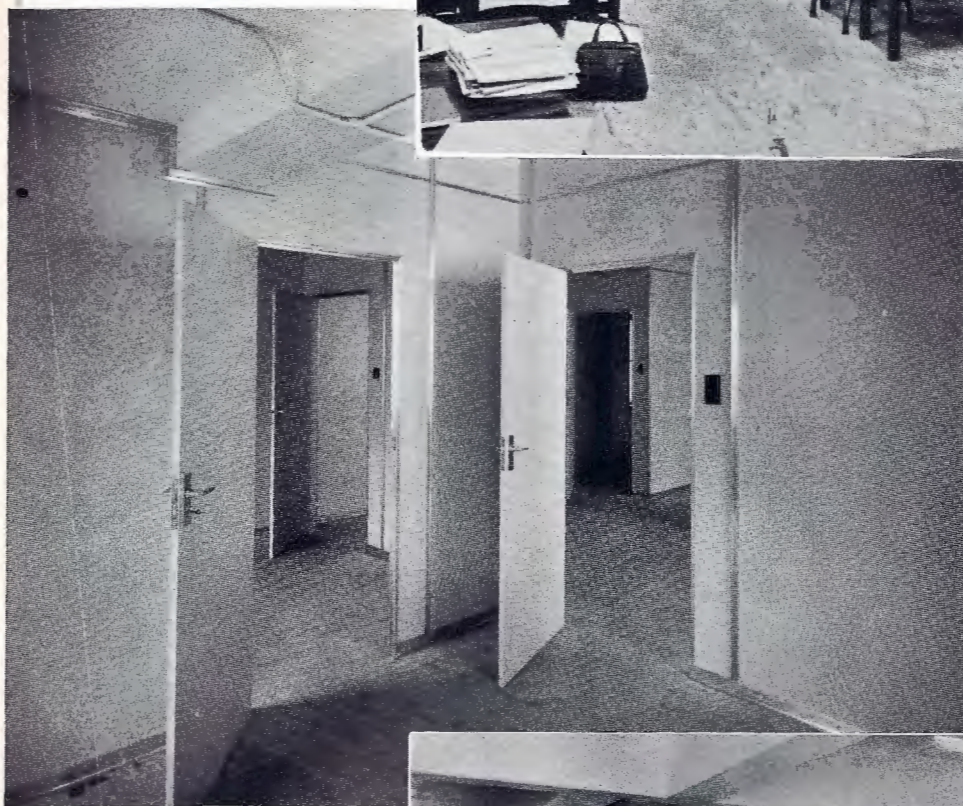


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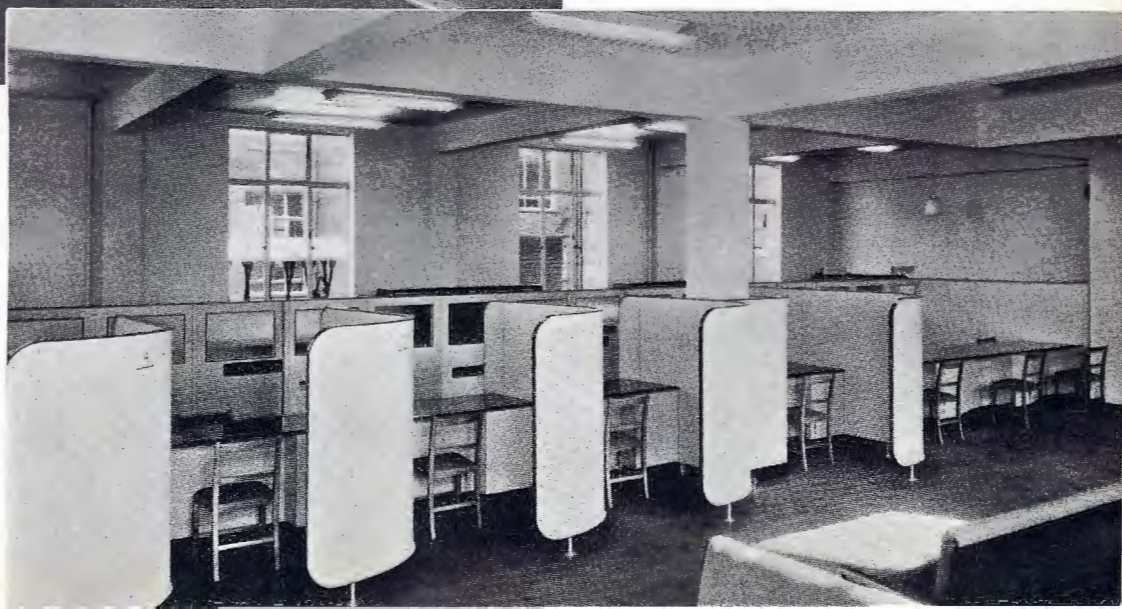
(ABOVE) *Some of the first Holoplast panels as installed in the wheelhouse and charthouse of the 7000-ton cargo vessel S.S. Empire Antigua, launched in 1943. (LEFT) The officers' recreation gallery in one of the most up-to-date cargo vessels yet built—the 8000-ton M.V. Wanstead. She is fitted throughout with Holoplast in a pastel stove-enamel finish. One of the great advantages of this finish is that repainting of bulkheads is entirely eliminated. Holoplast is popular in ships for two other reasons. It is easy to keep clean because dirt does not stick to its smooth surface; and it is uncongenial to cockroaches, lice and other insects, which avoid it because of its chemical content. Holoplast also scores because of its unusually good insulating properties. It will keep heat out in the tropics better than timber, just as in low temperatures it will keep out the cold better. Above all it does not catch fire—a quality of supreme importance everywhere on the sea.*

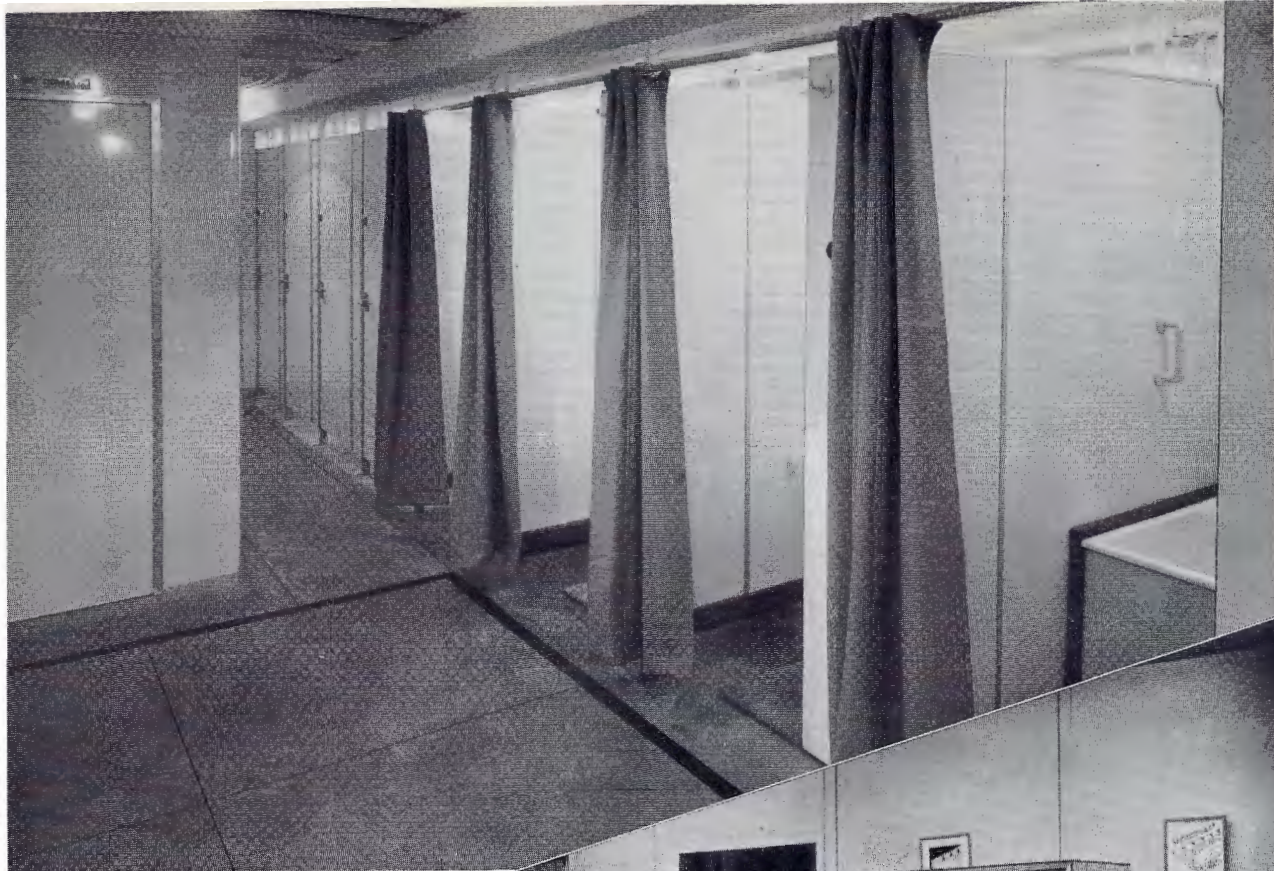
(RIGHT) A typists' room at a London office where Holoplast is fitted as acoustic partitioning. For this purpose it is pre-eminently successful. The panels are perforated on one side and then filled with glass-wool, which absorbs sound. Small noises will not penetrate; strident noises are muffled.



(LEFT) Office partitioning—one of the most extensive uses of Holoplast. Its special virtue for this purpose is space-saving. Holoplast panels are several inches thinner than those made with traditional materials of comparable strength.

(RIGHT) Interview cubicles designed for the Ministry of Labour. This is a good example of the versatility of Holoplast, which can be shaped to meet special needs.





(ABOVE) Holoplast partitioning in bathrooms on board ship—a purpose for which it is well suited, as it does not absorb moisture. (RIGHT) A prototype laboratory in which the tops of the benches are constructed with standard Holoplast (which has a shiny brown finish) and the rest with veneered Holoplast. This veneer is integrally incorporated in the manufacture. Holoplast is ideal for laboratory work, as it is impervious to both acids and alkalis. (BELOW) A prototype school building in the course of construction, with Holoplast used for both exterior and interior walls.



The History of GIANT GOGMAGOG

By W. S. Bristowe (*With three illustrations by the author*)

cum grano Saxæ



Two-headed giants are frequently referred to in literature, and the author here gives his own impressions of one of these monsters who survived until the seventh century A.D.

THE learning of English history became a duller subject for schoolboys after historians of the early eighteenth century had deprived them of Giant Gogmagog by banishing him from the history books he had graced for more than five hundred years. I can scarcely expect historians to admit their mistake by reinstating him in the place of honour he deserves, although none of my sources of information are less reputable than Geoffrey of Monmouth's twelfth-century *British History*, but I should like to rescue him from the obscurity into which he has faded by introducing him to you in my own way.

We all heard as children about an old woman who lived in a shoe, but few of us know anything about a Syrian emperor, Diocletian, who was also driven to distraction by his children. He had thirty-three, *and* they were all girls. It would have been an understatement to describe them as naughty, so when they grew up he decided that domestic peace could only be restored by getting them married to husbands who would keep them in order. Being an emperor it was easy to find husbands, and a day arrived without parallel in the history of the world when the thirty-three sisters were all married at one time.

I will hurry over the events of the ensuing night, the horror of which stuns the imagination. Suffice it to say that on the following morning the emperor learned that he now had thirty-three dead sons-in-law, each with his throat cut from ear to ear. No need for joint consultation existed. The princesses had to be banished immediately. A ship was provisioned, and they were all bundled on board and abandoned to the mercy of the winds and waves.

Tides and winds conspired to carry the ship westward to England, which in those distant times was known as Albion. Here, according to the ancient chronicles, they met with "demons," but we can be sure that this was merely a picturesque description of their second husbands, who were stern disciplinarians and far tougher than the first set. Indeed, all the evidence points to the conclusion that they were massive and ferocious giants. This conclusion is borne out by the tradition that Britain's earliest inhabitants were giants descended from the Titans, the fact that the union gave rise to a race of giants, and the seemingly conclusive evidence that one of the sons was called Gogmagog, a name which had been common in various forms among the eastern relations and

ancestors of the giants who were believed to have colonised Britain.

More and more giants were born until the Kingdom of Damnonium, stretching from Dartmoor to the Scilly Islands, could scarcely feed them all. In Havilan's *Architrenium* we read:

"... Of Titans monstrous race.

Raw hides they wore for clothes, their drink was blood,
Rocks were their dining rooms, their prey their food,
Caverns their lodging, and their bed their grave,
Their cup some hollow trunk."

Some waded out to rob passing ships and others fished for whales:

"His angle-rod made of a sturdy oak,
His line a cable that in storms ne'er broke;
His hook he baited with a dragon's tail,
And sat upon a rock and bobb'd for whale."

Others journeyed over the hills to settle in distant parts of Britain; but Damnonium remained their principal kingdom, with Gogmagog their chief:

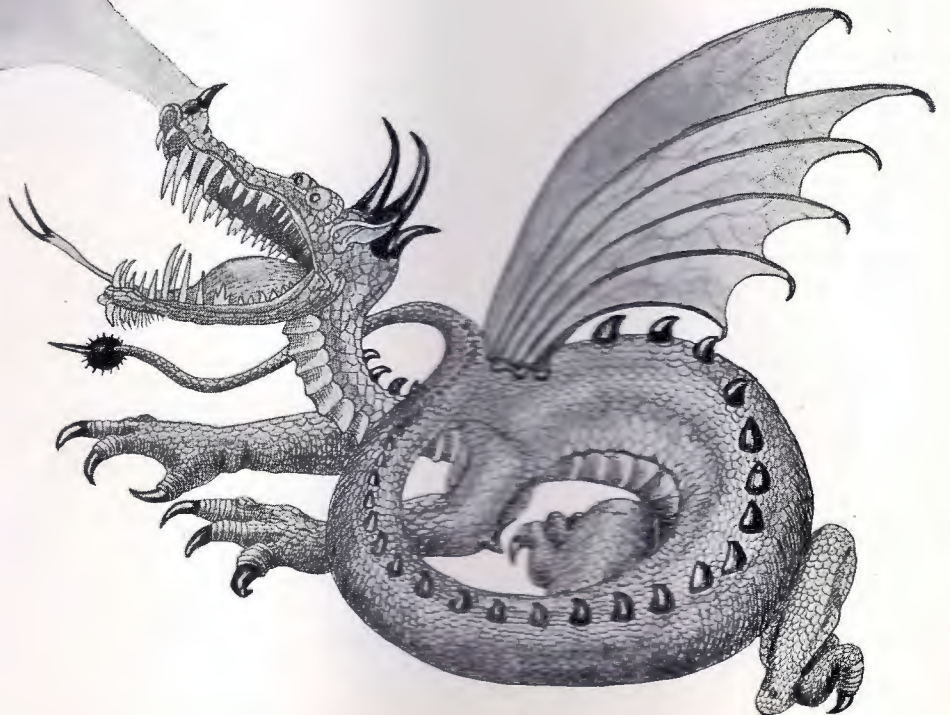
"Full eighteen feet in height he rose;
His hair, exposed to sun and wind,
Like wither'd heath, his head entwined."



Despite their ferocious appearance, the giants were, for the most part, good-natured, easy-going, stupid, lazy fellows. Greed and jealousy were their two main faults, and these forced them to live apart, each in his own allotted territory. Here, amidst tempest's spray or moorland mist, on rugged hills or desolate wasteland, they would sit or sleep in grim solitude. When they could stir themselves into activity they would build vast walls and castles of massive boulders or challenge one another to rock-hurling contests and other feats of strength. To this day Cornishmen will show you the remains of their handiwork.

In this manner the years slipped by until the peaceful reign of King Gogmagog was shattered for ever by the arrival at Totnes of Brutus and his Trojan warriors in search of a new home after their own had been captured and destroyed by the Greeks. Chance had brought the Trojan invaders to Albion, but they were weary of wandering and were attracted to Damnonium by the fish and wild animals they found there in the streams and woods. This, they decided, should be their new home. Brutus wasted no time in sending scouts into the interior to explore the land while the ships were unloaded and a feast prepared in celebration of their good fortune. Before long, each of the scouting parties encountered a giant of such terrible appearance that they turned on their heels and fled back to Brutus in panic while the giants themselves strode over the hills to bring news of the trespassers to their king. Having received their reports, Gogmagog decided that this could mean nothing less than an invasion of Damnonium by some race of pygmies who must be destroyed at once. Those giants who had not brought their clubs tore up oak trees by the roots, and, thus armed, Gogmagog led the way towards the coast.

Meanwhile the Trojan scouts had delivered their messages to Brutus. They had seen, he learned, shaggy monsters fully three times the height of an ordinary man with coarse matted hair and bristling beards, giants with snores as loud as thunder and with clubs whose blows could shake the ground like an earthquake.



Despite their ferocious appearance
the giants were, for the most part,
good-natured, easy-going, stupid, lazy . . .



Drawing of the wrestling match between the two giants Corineus and Gogmagog, purchased by the author in 1949 from an exhibition of giant drawings made by an unknown artist, possibly H. Fuseli, about 1780. Drawings of other giants by the same artist are in the Victoria and Albert Museum.

Just in time had Brutus rallied his warriors when an upward glance showed them a row of monstrous heads with glaring eyes and gnashing teeth menacing them from the cliff top. The next moment huge boulders came hurtling down to crush any who stood in their way. Leaping aside, Brutus led his men swiftly along the shore to a spot where they could gain the summit of the cliff under cover of trees and undergrowth. A shower of spears and darts whistled through the air. Hideous screams mingled with roars of fury as the missiles pierced the huge bodies. The giants' massive clubs were wielded on high and the ground shook with the force of their impact. Trojans were crushed to pulp, but others dodged the swinging club strokes and thrust their sword points deep into the giants' quivering flesh or slashed painfully at their legs.

The nature of the attack, so unlike the club and boulder fights to which the giants were accustomed, filled them with consternation. In vain did Gogmagog try to rally his comrades. For a brief moment they hesitated, and then the survivors fled helter-skelter, leaving their king to fight a heroic battle by himself. His slashing blows cracked many a Trojan skull before his wounds made further resistance impossible. In this fashion proud Gogmagog was captured and borne back in triumph to the Trojan camp. Here he was treated nobly, as befitting a hero, and his wounds were nursed with the utmost care until they were completely healed.

Now it so happened that the Trojans had in their midst a champion of great size named Corineus, whose opponents in

wrestling contests had always been worsted with the greatest of ease. Though Corineus was somewhat smaller than Gogmagog the Trojans had confidence that his greater agility and skill would bring him victory in a battle with the giant. Accordingly a match between the two champions was arranged to decide whether Damnonium should be ruled by men or by giants.

The giants assembled on one side of a cleared space on Plymouth Hoe, while the Trojan warriors gathered on the other. Arms were thrown aside, and in silence the two champions approached each other. With caution they circled for position, and then in an instant they were locked in embrace. Lusty sinews stood out like cords as each strove to gain the mastery. Heaving and staggering, the ground shuddered with their weight. Like bellows at a forge the hot breath rushed from their nostrils. Then, summoning his entire strength, Gogmagog drew Corineus to his breast with such force that he crushed and broke three of his opponent's ribs and flung him groaning to the ground.

While the giants roared and the Trojans sighed, giant Gogmagog stood proudly aloof with arms crossed waiting for his victim to rise and renew the battle if he dared. For a moment Corineus lay dazed, then, shaking himself, he gathered his strength and leapt to his feet with savage fury. Seizing Gogmagog by the shoulder and girdle he swung him from side to side like some mighty tree in a winter storm. Giddy and breathless, down fell the giant on his back with a deafening thud. When Gogmagog rose clumsily to his feet the fury returned to Corineus. With superhuman strength

that none could understand Corineus lifted his immense adversary above his head and hurled him to destruction from the cliff top. Down fell the giant on to the craggy rocks beneath, where his body was broken in pieces and the sea stained red with his blood.

In this fashion the giants lost their kingdom, but the memory of Gogmagog has survived and indeed outlasted that of his conqueror, Corineus. The spot from which the giant was hurled has borne the name of Gogmagog's Leap, and the battle was commemorated by two giant figures carved in the chalky hill slopes which survived until the people of Plymouth allowed the grass to grow up and obliterate the memorial soon after the year 1750.

Leaving Corineus to govern Damnonium, Brutus moved eastward and is said by Geoffrey of Monmouth and others to have founded the city of London about 3000 years ago. Here, according to tradition, he commemorated the historic wrestling match by installing two huge figures of Gogmagog and Corineus. Be this as it may, we find they were promenaded in the streets in 1415 and 1432 to welcome Henry V and Henry VI respectively to the city. In 1554 Philip and Mary were met at London Bridge by "two images, representing two giants, the one named Corineus and the other Gogmagog." On later occasions "the two Giants of Guildhall" greeted Elizabeth, Charles II, James II, and other monarchs besides figuring in pageants. They were made of wickerwork and pasteboard with a man concealed within, and Puttenham wrote in 1589 of a midsummer pageant: "where, to make the people wonder, are set forth great and ugly gyants, marching as if they were alive and armed at all points; but within they



The Giants in Guildhall—destroyed in 1940
(A drawing by Cruikshank from Hone's Ancient Mysteries Described)

are stuffed full of brown paper and tow, which the shrewd boyes, under peering, do quite fully discover and turn to a greate derision."

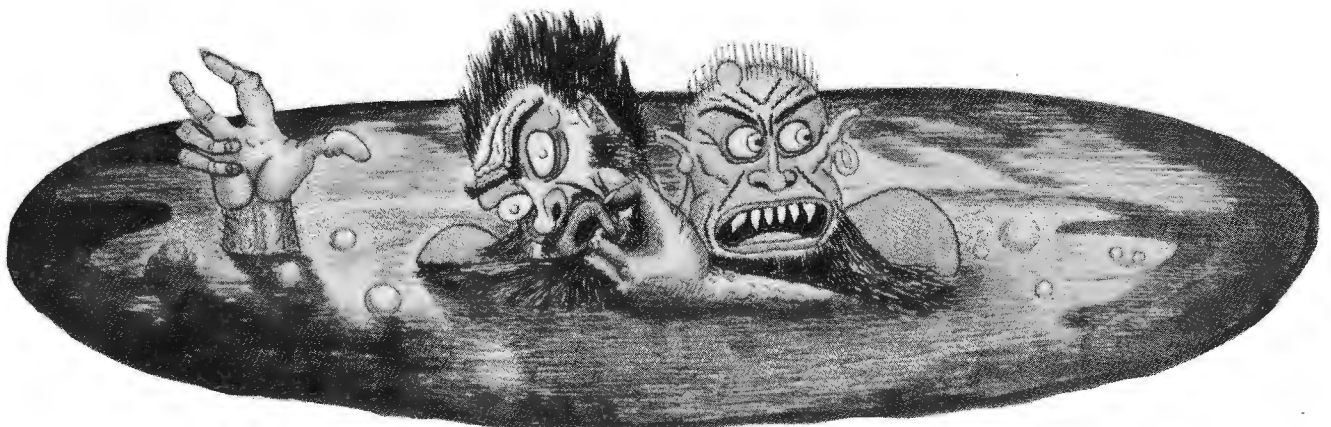
In 1708 a succession of wickerwork giants were replaced by heavier wooden figures about fourteen feet in height which could no longer be carried through the streets. This fact, combined with their omission from history books at about the same time, caused memories to be dimmed, and within a few years Corineus was forgotten and Gogmagog's name was shared between them. Thenceforth and until the present day they have been known as Gog and Magog.

It has been whispered that the giants used to wink and nod to each other when nobody was looking and to come down from their pedestals in Guildhall at midnight to

guard the City. Here these emblems of liberty and strength were destroyed by German bombs in 1940 when the Guildhall was gutted. This is not the first time the giants had been burned, as we can see from Hatton's *New View of London*:

"This stately hall being much damnified by the unhappy conflagration of the City in 1666, was rebuilt Anno 1669, and extremely well beautified and repaired both in and outside, which cost about 2,500 l., and 2 new Figures of Gigantick Magnitude will be as before."

Plans are being made by the Court of Common Council to rebuild the giants exactly as before. The writer of this article, however, is in touch with the Council and with the donor, Sir George Wilkinson, in an attempt to persuade them to seize the opportunity to revive the proper names and to redesign them with Corineus in Trojan garb and Gogmagog clad in skins and armed with a knotted club.



I.C.I. NEWS

ALKALI DIVISION

Distinguished Works Councillor

At the recent meeting of the Central Council held at Blackpool, Mr. Joseph Parkes (Wallerscote) was appointed a Trustee of the I.C. (Workers') Pension Fund, a position he will hold until his retirement from the service of the Company. With this latest appointment he has now held every rank available for a workers' representative within the Works Council Scheme. A photograph of Mr. Parkes at the recent Central Works Council at Blackpool appears on page 202.

Joe, as he is more familiarly known, joined the Company in July 1919 after serving four and a half years with the Forces in World War I, including over two and a half years on the western front with the Royal Garrison Artillery. Before serving with the Gunners he was in the grocery trade, but jokingly confesses that after almost five years in the army he found it hard to be civil over the shop counter, so promptly threw down his apron for the overalls of a heavy chemical worker. He is now assistant to the secretary of the Wallerscote Production Committees.

Whatever the meeting or the point under discussion, Joseph Parkes can always be relied upon to state his views fairly and without fear or favour; and his popularity is surely unquestioned when it is known that he has the following appointments to his credit:

Wallerscote Works Councillor for a total of 13 years since 1934; Alkali Division Councillor for 6 years; Central Councillor for 3 consecutive years, 1946-7, 1947-8, 1948-9; member of the Wallerscote Benevolent Committee for 12 years. Member of the Committee of Management of I.C. (Workers') Friendly Society for the present year. Member of the Northwich and District Council of Social Service Executive Committee for 5 years.

A part of Mr. Parkes' popularity may be attributed to his keen interest in sport. In his younger days he played a lot of soccer. He is at present secretary of the Wallerscote Bowls and Darts Leagues.

BILLINGHAM DIVISION

Prize Leeks

Tyneside is well known throughout the country for its enthusiastic amateur gardeners who specialise particularly in the growing of leeks and chrysanthemums. The village of Prudhoe, where the factory of the same name is situated, contains many such enthusiasts who are always a force to be reckoned with at the horticultural shows.

Mr. Tom Moore, a welder with the Company since 1941, is perhaps the outstanding winner of show trophies. For

almost thirty years he has devoted his spare time to gardening, and his many prizes testify to the prowess which has earned him a very high reputation among local gardeners.

There are two types of leeks grown for show purposes—the pot leek and the bleached leek. In the first type Mr. Moore has produced a leek $5\frac{1}{2}$ in. in circumference and 14 in. long. It should be pointed out that in deciding the length, the measurement is made to what is known as the button, i.e. the point where the leaves commence and begin to spread. In the bleached leek class he has grown leeks 7 in. in circumference and 16 in. long, again excluding the foliage.

The technique of leek-growing is a most skilful operation and needs patience plus a certain amount of mollycoddling. The local enthusiasts have their own secrets of preparing the trenches, and when show day arrives their magnificent specimens can be seen being transported in clothes baskets or some similar protective container, with the same care as might be given to a child. Tom Moore raises his own seedlings and in fact "exports" a number of these to different parts of the country.

He devotes the same care and attention to the growing of chrysanthemums, in which he has also gained a reputation as an exhibitor. After a preliminary inside period the plants spend some months outside, to return later to the greenhouse where their development is timed to be brought to the peak of perfection on show day. Their final "doctoring," which is done on the showbench before judging, is a work of art.

Rescue Reward

Mr. C. Cross (electrician) and Mr. F. McCoy (electrician's mate) were recently presented by their works manager, Mr. Rigg, with a letter of thanks and a £10 cheque as a reward for prompt and courageous rescue work.

Along with another electrician they were coupling up a newly erected lighting standard, using a wagon-type two-tier ladder, when a gust of wind blew the wagon over and the electrician was precipitated into a near-by pond. During his fall he was knocked nearly unconscious.

Cross and McCoy scrambled along a pipe, rescued him, and so avoided what might have been a tragedy.

Veteran Cyclist's Win

Mr. J. Brown (plant engineer) won the recent 25 miles cycle race held by the Tees-side Road Club. To give up racing and then after twenty-five years' retirement to knock off 2 min. 18 sec. from what was his previous best time is a remarkable performance.

But perhaps even more remarkable is Mr. Brown's performance on the Billingham-Stockton road a few weeks ago.

Cycling home after his day's work he had the misfortune to split the rim of his rear wheel for about fifteen inches. Nothing daunted, he removed the tyre and inner tube (which he draped about his neck), and mounting his "tireless" steed rode home boneshaker style!

DYESTUFFS DIVISION

U.S. Scholarship Award

Dr. J. Toogood, a research chemist in the Colours Experimental Department at Huddersfield Works, has been awarded a United States scholarship to attend a four-month summer course at the Massachusetts Institute of Technology, Cambridge, Mass., U.S.A. There will be in all seventy-five students from twenty nations taking part in the course.

There are six of these scholarships for Britain. They are awarded annually by a Committee of the National Students Association at the Massachusetts Institute to university graduates of academic distinction and of at least two years' practical experience. All expenses incurred in the U.S.A. are paid by the Students' Committee. The four months course is most intensive. It is understood that Dr. Toogood has selected Chemical Engineering as his field of study.

Dr. Toogood is a native of Newport, Mon., and attended Cardiff Technical College, where he obtained a First Class Honours B.Sc. (London) degree. He then went to the Imperial College to undertake research work which culminated in his being granted a Ph.D. degree (London). He joined I.C.I. in September 1949.

GENERAL CHEMICALS DIVISION

Outward Bound

The Outward Bound Trust was formed four years ago for the purpose of taking over an existing short term sea school at Aberdovey in Merionethshire which had been founded five years earlier. Every year more than a thousand boys attend a month's course at this school learning, among many other things, to understand and to live up to the Outward Bound motto: "To serve, to strive and not to yield."

This month eight boys from General Chemicals Division are to find out for themselves what the Outward Bound Schools have to offer them—and to demand of them. Four of them are going to the Aberdovey Sea School and four to the recently founded Mountain School at Eskdale. Six of these boys are trade apprentices, one a drum-shop boy, and one from the Division Supply Department office.

What does the Division hope from this innovation? The short answer to the question can best be given by quoting the Outward Bound Trust's own words: "Our object is to open to adolescent boys and girls the means to a fuller life for themselves and one that will be of greater value to the community." The Trust aims at strengthening moral fibre and Christian ideals; it lays emphasis on character training and on encouraging self-reliance; and it provides opportunities for producing and revealing the qualities of leadership.

The number of boys attending each course varies a good deal. During the winter months there may be some seventy boys, and during the summer nearly twice that number. Ages vary, too, from 15 (which is considered rather young) to 19, and the boys come to the schools from all parts of the country and from all walks of life.

Dogs for the Blind

A man with a remarkable hobby is Mr. A. Owen of the Accounts Department of Castner-Kellner Works. Answering the appeal of the Guide Dogs for the Blind Association, he has since April 1948 bred 36 Golden Retriever and Labrador puppies, of which six have been accepted for the blind.

The appeal was made in September 1946. Mr. Owen visited the Guide Dogs for the Blind Association's training centre at Leamington and after discussions with Captain Liakhoff, the director, agreed to breed pedigree Golden Retrievers and Labradors at his own expense. The site chosen for the kennels was a disused air raid shelter under the arch of a bridge spanning a canal in Runcorn, and the first job was to reconstruct the shelter so as to house the puppies. Extensions were needed, light and heat had to be laid on, and after levelling the outside enclosure, fencing and gates had to be erected.



One of Mr. Owen's trained dogs at work leading the blind

Mr. Owen tackled this job on his own. The work took twelve months, and it was not until April 1948 that accommodation was ready to welcome the first litter of eleven puppies.

The next phase was the care and rearing of the puppies plus their preliminary training. The Association prefers bitches, and these are kept by the breeder until they are eleven months old. The dog puppies are sold on behalf of the organisation.

The preliminary training consists of teaching the puppies to walk always on the left-hand side and slightly in front of the master. This is the reverse of the usual training of a dog, which normally is taught to walk to heel. The guide dog, however, when out in the street does not only accompany her owner—she is literally the eyes of her master or mistress and has to superimpose a truly human initiative on the canine quality of unquestioning obedience.

Since the first litter in April 1948 Mr. Owen has had 36 puppies through his hands. The second litter in September 1948 produced nine, the third in January 1949 produced another nine, and the fourth in September 1949 realised seven. Of these the training centre of the Association has received six Golden Retrievers from the first litter, four of which were accepted for training, and four Labradors from the second litter, two of which have been accepted for training. Up to the present time, of these six accepted for training one Labrador and one Golden Retriever are now fully trained and are

working with blind people. A further five Golden Retrievers will be sent to the training centre by the end of January.

Mr. Owen's kennels are, up to the present time, the only ones in this country where dogs are bred specifically for this purpose. The object of this undertaking is to raise the percentage of trainable animals by the use of selective breeding, and sufficient has already been done to prove that the right lines are being followed. The success already attained reflects great credit on Mr. Owen, who in his turn is indebted to his wife Mrs. Louie Owen and a good friend, Mr. William Cook.

New Liverpool Club

The Recreation Club for the Liverpool Staffs of the General Chemicals Division, Salt Division and the I.C.I. Shipping Department has now been opened. The premises, which boast excellent facilities, are at Leece Street and are already proving themselves a great boon to all I.C.I. employees in Liverpool.

The club will be pleased to welcome new members, and anyone interested should get in touch with the secretary, Mr. M. Henley (Shipping Office), or the treasurer, Mr. J. M. Fanning (General Chemicals Division).

LIME DIVISION

Sixty Years' Service

Mr. Jack Salt, formerly works manager of Tunstead Quarry, has retired in Australia after almost sixty years of service with I.C.I. and its predecessors.



Mr. Jack Salt

Mr. Salt started work at Harpur Hill Quarry in 1891, became foreman in 1909 and was appointed works manager in 1923. Transferred to Tunstead Quarry when it was first opened, he remained there until 1939, when he went to Australia as manager of the I.C.I.A.N.Z. quarry at Angaston. When he was on leave in the Buxton area almost two years ago it was hard to realise that he was then 70 years of age.

METALS DIVISION

Induction to Industry

Among the special arrangements which Metals Division makes for looking after its young employees are the Induction Courses, designed to acclimatise juveniles to their new environment in industry.

Typical of these was the three-day course which catered for fifteen boys who left school at the end of the spring term and joined the I.C.I. payroll early in April. When the formalities of booking in, medical examination and aptitude tests were complete, the boys met together to learn, from various appropriate members of the management, something of the factory and Company in which they would be working. They heard, too, of the arrangements made for safeguarding them against accidents and for looking after their health, welfare and recreational needs. This course of instruction, spread over three days, was interspersed with English and general knowledge tests and a tour of the works.

The object of these courses, which are run on informal lines in pleasant surroundings, is twofold. In the first place, the boys are able to bridge the gap between schooldays and working life in easy stages; but even more important, those responsible for guiding their employment can assess their capabilities much more accurately than is possible under normal engagement routine, and see to it that (in the words of a local Press reporter) "there are no square pegs in round holes at Witton."

Catering Conference

On a certain day in April the Home Guard Hut at Witton looked in some respects very like an operating theatre. A "body," decently covered in clean towels, lay on a scrubbed table; white-coated assistants washed their hands in preparation for what was to follow; rows of knives, saws and other instruments, together with a variety of bowls and labelled containers, lay ready to hand. But the occasion was not what it seemed. The experts were caterers, not surgeons, and the "body" was nothing more than a hind-quarter of beef.

The audience in whose honour all this had been prepared was made up of catering manageresses from all the Metals Division factories, visiting Witton for a conference. In all, the programme, divided into five sessions, lasted two and a half days. Mr. W. J. Willmoth, I.C.I. Chief Catering Adviser, watched the proceedings with great interest and contributed a talk on the purpose and aims of the Company's catering service. Five other experts spoke on subjects of immediate interest to the manageresses, and each talk ended with a discussion of points raised.

The most picturesque items were the demonstrations, which ranged from butchery to cake decoration. Mr. R. A. McCafferty, Catering Manager of Plastics Division, dealt deftly with carcasses of mutton and beef and a side of bacon, matching his skill with a brisk and entertaining commentary. Mr. A. Surtees, North Eastern Area Catering Adviser, decorated several cakes with enviable ease and mouth-watering results.

The keen interest with which the manageresses followed the proceedings and entered into discussions seemed to indicate that the "inner man" of the Metals Division will be cherished even more skilfully in the future, and proved that, in catering as in many other fields, those who are already competent are the most willing to learn.



The late Col. Stanley Smith inspects at Truro School the A.T.C. in whose welfare he had an untiring interest

NOBEL DIVISION

Colonel G. E. Stanley Smith

Many in I.C.I. will have affectionate memories of Colonel G. E. Stanley Smith, D.S.O. (T.D.), who died in Cornwall on 5th May at Trevella, the residence of his brother Mr. L. W. B. Smith.

Colonel Stanley Smith saw active service with the D.C.L.I. both in the Boer War and in the Great War, when he commanded the 1/4th D.C.L.I. in India, Aden and Palestine. He was awarded the D.S.O. and was mentioned in despatches three times.

His commercial career with his family firm of Bickford Smith & Company Ltd. began at their Tuckingmill factory in 1892, where in his early days he studied the practical side of safety fuse manufacture both at home and in associated companies abroad. In due course he reorganised and extended the Bickford Smith factories to meet the greatly increased demand which arose after the Boer War.

On demobilisation at the end of the Great War he joined the Head Office staff of Explosives Trades Ltd. and later became a director of its successor, Nobel Industries Ltd. Shortly after the formation of I.C.I. Colonel Smith became chairman of the Explosives Division, a position he held until his retirement in 1936. He remained an adviser on safety fuse matters, taking an active part in the management of the Tuckingmill factory during the last war.

Colonel Smith was always intensely interested in all forms of outdoor recreation. He was a real lover of horses, and his keenness as a rider to hounds showed which sport held pride of place in his affections. He was an honorary colonel of his

regiment, and up to two years ago was chairman of the Governors of Truro School and chairman of the West Powder magistrates' bench—positions previously held by his father, Sir George Smith.

The funeral took place at St. Erne Church on Tuesday, 9th May, and was attended by many members of the staff and workers from the Tuckingmill factory and also by representatives from the Nobel Division office in Glasgow.

Homes for War Veterans

Two modern houses built on the Hillcrest Housing Estate near the northern boundary of Ardeer Recreation Club bear a plaque on their walls which reads "Presented by the Directors of I.C.I. and the Employees of Ardeer Factory."

The completion of these houses, now occupied by two disabled ex-service men, is the climax of many years of charitable generosity on the part of Ardeer. They have been paid for by contributions to the Scottish Veterans Garden City Association from Ardeer Factory employees, from the Ardeer Recreation Club, and from the directors of I.C.I., who covenanted to give £100 a year for seven years.

At the beginning it was intended that the houses would be built within the grounds of the recreation club. This was not possible, but generous help came from Col. Mickel of Mac-taggart and Mickel, who presented the building sites at a nominal charge. In addition Col. Mickel undertook to build the houses without profit.

The happy result of all this co-operation was seen on 9th May, when the official ceremony of presenting the keys to the tenants was performed.

Fly-fishing Championship

Dr. F. Johnstone of Nobel Division Headquarters was placed sixth in the fly-fishing championship held at Loch Leven on 22nd May. His catch was two trout of 2½ lb. The winning catch was five trout of 4 lb. 5 oz.

Some thirty anglers competed, including twelve members of the English fly-fishing team which had been competing in the international match two days earlier. Fishing conditions were difficult. Heavy rain and a light easterly wind in the morning were followed by flat calm in the afternoon. Many anglers, including the captain of the English team, failed to catch any trout at all.

PAINTS DIVISION

Blackpool Repainted

For seven miles along the promenade at Blackpool shelters, railings, lamp standards, trams, public buildings and colonnades are all being painted in 'Dulux,' under a colour scheme proposed by Paints Division Colour Advisory Section.

This is the largest outside order yet tackled by the Colour Advisory Section, the bulk of whose work is usually concerned with interior decoration—particularly factories, schools and hospitals.

Gold Medallist Golfer

Mr. A. C. Skinner of Leatherhead Warehouse has again qualified for the *News of the World* Artisans Golf Championship, to be played this year at Moor Park. His score of 145 brings him another gold medal.

Major J. C. Poole

Major J. C. Poole, a Paints Division director, has been appointed a permanent member of the Transport Tribunal with effect from 4th May, and he therefore resigned from the service of the Division on 30th April.

Major Poole was managing director of Nobles and Hoare Ltd. for a number of years before that firm was acquired by Paints Division in 1944. He will be greatly missed in the Division.

PLASTICS DIVISION

'Terylene' and the Black Prince

The services of Plastics Division have been called in to help conserve by means of a 'Terylene' netting the jupon worn by the Black Prince nearly 600 years ago.

Recently the jupon, which together with other relics of the Prince has hung above the Prince's tomb in Canterbury Cathedral since 1376, was sent by the Dean and Chapter of Canterbury to the Master of the Armouries of the Tower of London for cleaning and repair. It was found that the silk netting with which it had been covered about fifty-six years ago had completely rotted. The jupon itself, showed little if any deterioration from its condition when photographed in 1894.

The Black Prince's metal and leather relics were cleaned in the workshops of the Armouries, but the Master, with the approval of the Dean and Chapter, entrusted the re-netting of the jupon to the Royal School of Needlework.

It was necessary to find a netting which would last longer than that formerly used, the life of which had proved to be about fifty years. The Royal School of Needlework consulted Plastics Division and a netting made from 'Terylene' was



Preserved for posterity with the aid of 'Terylene' net

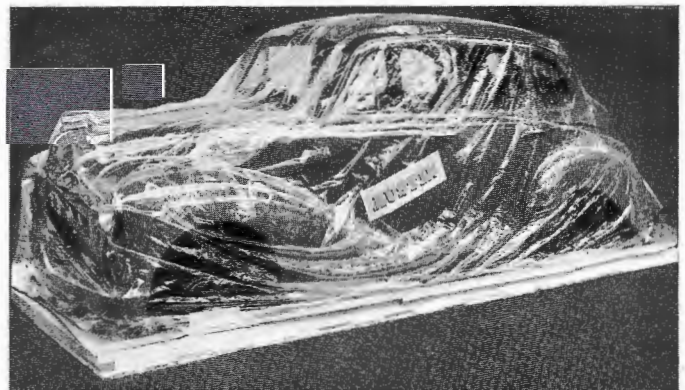
supplied. 'Terylene' is believed to last indefinitely, and this unique application should be an interesting test.

The beautiful colours of the jupon have faded during the centuries, and it is now an overall dun colour. But upon close examination traces of red, blue and gold are clearly visible, revealing something of the jupon's original splendour. In order to render the 'Terylene' net less visible it was carefully dyed in Fibres Development Department to match the jupon.

The Fish of the Month

The £20 prize for the April section of the 'Luron' angling competition was awarded to Mr. J. Bell of the Stranraer and District Angling Association. Mr. Bell's catch was a magnificent brown trout weighing 10 lb. 5½ oz.

The second prize of £5 was won by Cpl. J. Cardwell, R.A.F., Swanton Moreley, near Dereham, Norfolk, with a 5 lb. brown trout 22 in. long caught in the river Wensum.



Austin cars are now being exported sealed in an envelope of 'Alkathene.' This gives complete protection from the corrosion of sea spray without adding extra weight and without hiding the car from view.

Food Parcels from I.C.I.A.N.Z.

For the sixth time since January 1947 the staff of Plastic Division's associate company in Australia have asked for the names and addresses of Plastics Division employees to whom they may send food parcels.

The present request for 340 names—140 from the staff and 200 from the works payroll—will bring the total number of parcels received by the Division from I.C.I.A.N.Z. to the impressive figure of 975. The names of recipients for this latest allocation have been drawn by ballot from among employees who have not previously received a food parcel.

I.C.I. (MALAYA)

Mr. R. D. Gillespie

Mr. R. D. Gillespie, the chairman of I.C.I. (Malaya), left Singapore for the United Kingdom on 21st May on retirement. Before he sailed he received from the European staff of I.C.I. (Malaya) a salver inscribed with each person's signature and from the Asian staff a silver-mounted writing set.

Mr. Gillespie joined Brunner, Mond & Co. in 1920 and shortly afterwards went to Brunner, Mond (China), of which he was appointed a director in 1925. He became a director of I.C.I. (China) on its formation in 1928 and was interned in Hong Kong by the Japanese when they occupied it in December 1941. In September 1942 he was repatriated and served with the British Raw Materials Mission in Washington until the end of the war, when he returned to Hong Kong, being appointed vice-chairman of I.C.I. (China) in 1947. He was also a director of the Hong Kong and Shanghai Banking Corporation, chairman of the Hong Kong General Chamber of Commerce for two years, and a member of the Legislative Council of Hong Kong.

In 1948 he was transferred to I.C.I. (Malaya) as chairman of that company, in which he is succeeded by Mr. M. F. Cutler. Mr. Gillespie carries with him our best wishes for a long and happy retirement.

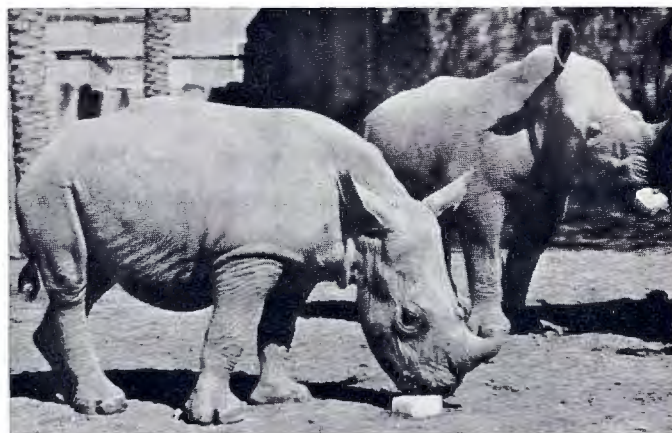
REGIONAL OFFICES

A Scots Word Puzzle

The Dyestuffs Department of Edinburgh Area Office, whose area covers a vast territory from the river Tweed in the south to the Orkneys and the Shetlands in the north, has received the following teaser from a crofter in one of the remote islands where Gaelic is the mother tongue:

"I have send you 1/- some time ago for Navy Blue Coomassie dye. It was in the list that I got from my friend 1/4¹/₂d in mistake I send you 1/- you write me for another 1/4¹/₂d so I send you by return 1/4d. I didn't mind to put the 1/2d on the P.O. and had again letter for 2d. you say that the dye was 2/6 week to day the post came with 1 lb dye on C.O.D. I say to him that I pay you for the 2d so that post master says to me to pay the C.O.D. and that you will send on my money again that you got it as you says in your letter to send 2d he says that it must be mistaken at the clerks it was very funny to send it C.O.D. as I never ask it like that you got 1/- first 1/4d again and the last letter you ask me for 2d please send on the money but take you 2d from the 2/10 I pay to the post 2/10. Hope to hear from you by return it will be alright you might make mistake likely."

Now—who owes whom what?



I.C.I. Salt Licks are now a popular addition to the ration at the Khartoum Zoo. The above photograph shows two rare white rhinos enjoying a meal off them before leaving by special chartered plane for the Antwerp Zoo. The rhinos were sold for £7000.

* * *

Photographic Competition

The *Magazine* photographic competition briefly announced in the June issue will be confined to holiday snapshots taken this summer by I.C.I. employees. The prizes will be £3 for the winner, £2 for the second and £1 for the third. In addition 10s. 6d. will be awarded for every photograph published.

Mr. C. R. Wormald, manager of The Kynoch Press Photographic Studio in London and last year's president of the Institute of British Photographers, has kindly consented to judge the photographs. All entries must be received at the *Magazine* office, 26 Dover Street, London, W.1, not later than 31st October. The winning photographs will be published on the last two pages of the February issue.

* * *

August Issue of Magazine

In the August issue of the *Magazine* pride of place is given to an article on British Nylon Spinners Ltd., which is owned jointly by our company and Courtaulds Ltd. This is followed by a short two-page article on the hobby of building miniature locomotives and railways written by Harry Townley of Buxton. We then give four pages of pictures and one page of text to a stage-by-stage description of the complicated process of the manufacture of Eley-Kynoch shotgun cartridges at Birmingham.

Mr. Kevin Fitzgerald, manager of our selling company in Eire, writes an amusing article on the English in Ireland—an article which acts in some ways as a counterweight to the more serious note struck by Mr. A. J. Steward, I.C.I. Chief Accountant, who weighs up the pros and cons which have to be considered by anyone contemplating accountancy as a career. We end up on a lively note with an amusing description by Miss D. B. Thomas of Metals Division of some of her more memorable experiences.

The pleasures of

COARSE FISHING

By S. Howard (Dyestuffs Division)

Illustrated by W. Randell

COARSE fish generally lie on or near the river bed or the bottom of the lake or pond. In fact, it is due to this habit of the fish that coarse fishing is often referred to as "bottom-fishing": it has nothing to do with the sedentary habits of some competition anglers.

During the angling season, coarse fish lie on the bottom for one of two purposes—feeding and resting. It is a simple life, that of a coarse fish, with just the two ideas. The third idea, breeding, is kept strictly in its place, somewhere between 15th March and 15th June, which must be very character-forming.

If the fish are feeding and are big and important enough they will go to the fishy equivalent of the Savoy, and the hungry small fish will have to edge apologetically into the underwater. Because, naturally, you are after the big fellows, you must learn to seek out the Savoy Hotels of the water which you fish (and your hooks must be as sharp as a head waiter's!).

The best feeding places for coarse fish occur where the river bed falls suddenly at the end of a rapid stream and there is a ledge roughly at right angles to the current. Over this ledge comes the food dislodged by the fast water above; and under the ledge (in the "hole") the big fish are in residence, avoiding the main press of the river and waiting for the food coming down. Should the rapid water above be weedy and the hole itself contain weeds, defend it with your life against all other anglers! It will give you good sport at all times of the year. Last September such a place on the Wye gave up fish of such quality and in such quantity that the lucky angler



You might find yourself swarming up the rod and stabbing the fish at the top

suspected murderous intentions in three angling spectators.

Snack bars for fish occur on the inside of the river bend, just out of the main current, where the water is between a yard and two yards deep and particularly if it is overhung by trees. Caterpillars and beetles drop from these trees, and waiting down below are many ordinary fish and one or two really big fellows. Substitute fish-paste sandwiches for caterpillars and sausage rolls for beetles and it is very like a railway station refreshment room—only cleaner.

What about the fish that are not actually feeding but resting? Think of a human loafer. You never saw one stand for long in the middle of a pavement. He gravitates to the corner or the lamp-post, as the black, shiny marks prove. Well, loafing fish are very similar to loafing humans. Never expect to find a coarse fish on a bare, level, featureless river bed. If you do, he will be some small, meek and mild creature who dare not show his face where the underwater Gregory Pecks forgather. Look, then, for big rocks in the river bed, and a fish will surely be hanging about round the corner.

Look for clumps of weed, and a fish will be idling in this Hyde Park. Such fish will often pick up any passing titbit—and what a surprise they will get if there is a string tied to it!

There is only one way in which an angler can interest and make contact with a fish. That is by offering food or something which the fish can be deluded into regarding as food. Man may not, but fish certainly do, live on bread alone. A fish with higher aspirations simply cannot be imagined.

The angler for coarse fish, therefore, offers food to the fish—but food with a hook in it, when it becomes a bait. Baits for coarse fish can be worms, maggots, wasp larvae, bread paste, small fishes, frogs, cheese, stewed wheat, hemp-seed, pearl barley and many other things. A vivid memory comes of baiting with oysters, but that was a long way from England, and the oysters were eighteenpence a dozen and smelled hideously at the end of a hot day. But for fishing in a British river you could forget everything except worms and never regret it. The important thing to remember is that the clearer the water, the smaller should be the worms. In brown flood-water you can bait with a couple of big worms like snakes; but in a gin-clear low river the fish seem to prefer a single dainty wriggler. Never rub the worms with camphorated oil to keep out the cold—it is quite unnecessary despite the advice which was invariably given to beginners by one grand old angler who is now with his Maker. The bitter resentment and writhing indignation of a worm anointed with camphorated oil are something that would surprise Laocoön.

Coarse fish can and do live in still waters such as lakes, ponds and canals. Try to find a clear spot between two beds of weed and with a minimum of four feet depth of water. To get any sport at all out of fishing in still water it is essential that the fish should be able to swim farther away from the angler than the extent of the angler's line, or alternatively there should be sufficiently heavy weed for the fish to find shelter when hooked and, by running the line round the weeds, break free. There is no excitement in hooking a fish, however big, in a small pond or a canal when the angler can "walk" the fish round or between locks until he or the fish is overcome by boredom or old age. For still-water fishing take some maggots for the fish. Take a good book, or some tatting, and an air ring for yourself—the sport is often a slow one, and coarse fish, with one exception, only put up a small fraction of the fight you will experience in a river.

In both rivers and still water, after you have found a likely feeding-place, you would be well advised to ground-bait. To ground-bait a fishing spot you have to throw into the water some fish food; and the most attractive part of this food must be the same kind of bait as you have on your hook. For instance, if you are fishing in a river with worms, then your best ground-bait would be worms cut into half-inch lengths and mixed with about twenty times their weight of a crumbly paste composed of equal parts soaked and mashed bread, bran and clay. A bucketful of this should last two days. You should throw this noisome mess into the river, a cupful at a time, in such a way as to ensure that it reaches the bottom of the river at the point where your fishing starts. Never forget that a strong current can carry ground-bait a very long way before letting it settle on the river bed. Many a time an angler has had a wonderful day's fishing on the strength of ground-bait thrown in by another angler round the corner upstream. Such an event makes for complete enjoyment.

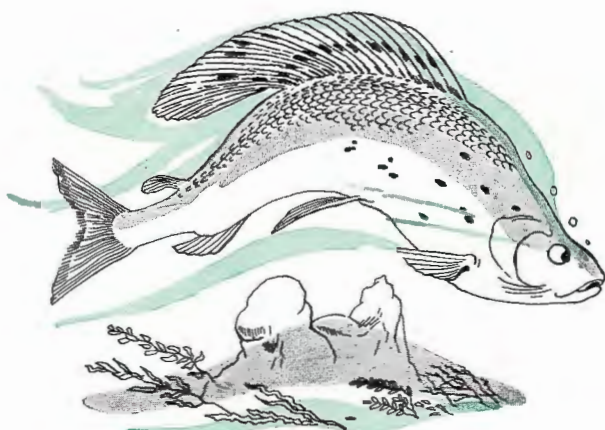
In still water ground-bait should be used a spoonful at a time—no more. The ponds of this country must become completely soured in the summer due to anglers who fling in enough farinaceous ground-bait to satisfy a million Oliver Twists. If you have maggots on your hook, then your ground-bait had better be made from bread, bone-dried in the oven, ground to a powder and wetted back to a thin paste. It should contain a few maggots, and when you throw in a spoonful it should disintegrate and sink slowly in a fine cloud.



"No, thanks—I'm resting"



Perch are always looking for trouble



Grayling are the athletes, the hurdlers

This business of ground-baiting deserves careful attention because it can make a great deal of difference to the results of a day's fishing. It alerts the fish in a remarkable way. They seem to pass the word round that the old place is under new management and there is some service at last.

Only nine of the many kinds of coarse fish are of real importance to the coarse fisherman. These are roach, perch, rudd, grayling, bream, chub, carp, barbel and pike. A roach, perch, rudd or grayling of 1½ lb. and over is a decent fish, while the standard of "decency" would be about 4 lb. for bream and chub, 6 lb. for carp and barbel, and 10 lb. for pike. These weights would be nowhere near the record weights, of course; they only indicate the size of fish which you could mention that you had caught. Anything smaller you had better keep to yourself if you are staying in a fishing hotel.

Great differences in temperament occur between the different sorts of fishes. Roach are the furtive and henpecked type. They can sidle up and take a bait quickly and quietly. Perch are the Irishmen of the fishy world, always looking for trouble. You cannot scare them off. Rudd are slightly more extroverted than roach. They sometimes feed on the surface. Grayling are the athletes, the hurdlers. They frequent faster water than other coarse fish and bob up and down in a flash to take flies from the surface. Bream are hoggish. You can imagine them tucking their napkins into their waistcoats. But they are very chicken-hearted when hooked, and I would not worry if I never caught another bream. Chub must be told by their parents never to accept gifts from strange men. Suspicious to a degree, they will never be caught if they see you, so keep your head down, leave that bright yellow pullover at home and wear a khaki shirt. Carp are quiet until roused, but when hooked they will wreck everything in sight in their rage. In this one respect they are similar to barbel, but while carp inhabit still water, barbel prefer the stream.

Carp are the one exception to the rule that coarse fish fight better in a river than in still water. It would be impossible for any fish to fight harder than a carp does. I can never forget hooking a very big carp in a lake fringed with flag irises. I would not like to make a public guess at the weight of that carp—my private guess still makes me tremble—but she ripped the line off my reel and went into the flags as fast as Fanny Blankers-Koen. A really big carp is nearly unbeatable if there are strong weeds within twenty yards of where it is hooked.

Pike are different from all other coarse fish—they are cannibal all the time. If they take a worm occasionally, it is only as a cannibal king would chew a betel-nut between missionaries. In catching pike, then, the angler has to take advantage of this cannibalism and offer a fish—or something which passes for a fish: drop a small live fish of two or three ounces on a paternoster tackle into a quiet run between two weed beds, or near to a willow growing into the water, or in a backwater where floods have piled up the wreckage. Pike often leap out of the water like rainbow trout when hooked, and the angler must be quick to lower his rod and slacken off when the water bursts into foam. Never be deluded into using anything but steel wire for the last twenty inches of the trace which is fastened to your pike hooks. Steel wire can be obtained as fine as a hair, but it cannot be bitten as can gut or nylon. Remember that a pike has more teeth than George Formby, and they are very much sharper.

The best time for coarse fishing is daybreak. At dawn, in autumn and winter, mere man should fortify himself in any

way possible. Forget all that nonsense about the yardarm, and take some rum and coffee in a vacuum flask. Be careful about overdoing it, though, or you might find yourself swarming up the rod with a knife in your teeth and stabbing the fish at the top!

The question of tackle for coarse fishing is important. The best hooks this world has to offer are Model Perfect, but they all seem to go to the export market at present. They have needle points, perfect temper, and tremendous holding power. Model Perfect hooks hold in the mouth of a fish until all is blue, and you will find the same thing happens if you hook yourself in the trousers seat: in fact, the atmosphere will be an even deeper shade of blue.

The hook should be whipped to nylon monofilament—it is less visible than gut. Whatever the length of nylon whipped to the hook, you should make up the length to three yards with more nylon monofilament. This gives the least visibility to your line over the normal limits of observation of the fish. Attached to the three-yard nylon monofilament cast should be reel line of plaited silk or plaited nylon. Plaited nylon is preferable, being smooth and strong and taking up little water. Unfortunately it is rather scarce. I have a personal preference for fixed-spool reels for coarse fishing (with the axis of the reel parallel to the line) because they undoubtedly make long casting easy and a change from bottom-fishing to spinning can be effected in about a minute.

The ideal float should be seen by the angler but not by the fish. It would be a transparent 'Perspex' tube with three quarter-inch rings of colour at the top—yellow, black and white—but I have never seen one. Some day a manufacturer will make this perfect float.

Unless you intend to be a match fisherman, the rod should have some slight whip in the middle joint. A match or competition fisherman who is glued to a peg on the river bank, who catches a hundred or so fingerlings of a total weight of a few pounds and wins a clock, has to strike quickly and swing out his tiddlers quickly, so he needs a rod which is stiff to the last foot or two, but it is difficult to play a big fish in a big river if only the top joint is pliant. Ten and a half feet is the right length for a coarse-fishing rod, and it could weigh up to ten or eleven ounces.

There is one final word of advice which I would like to say to coarse fishermen. Please do not limit your fishing to coarse fish. Take up fly-fishing for trout as well. My own motto is: "Anything with fins."





"As I was going to St. Ives . . ."

(Photo: I.C.I. Magazine)